FINAL REPORT

Feasibility Study
for the Evaluation of the
NICHD Women's Reproductive Health Research
Career Development Centers (WRHR) Program

Prepared for the

Reproductive Sciences Branch

Center for Population Research
National Institute of Child Health and Human Development
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by

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SECTION 1: INTRODUCTION

Purpose of the Feasibility Study

The Women's Reproductive Health Research Career Development Centers (WRHR) Program was initiated by the National Institute of Child Health and Human Development (NICHD) in FY 1998 to enhance the career development and training of obstetrician-gynecologists (ObGyns) who had recently completed their postgraduate clinical training and were interested in pursuing a career in basic, clinical, and/or translational research. An emphasis was placed on promoting multidisciplinary research relevant to obstetrics and gynecology and its subspecialties: maternal-fetal medicine, gynecologic oncology, and reproductive endocrinology and infertility. Relevant fields such as adolescent gynecology, urogynecology, and the reproductive health of women with disabilities were also included. The Office of Research on Women's Health (ORWH) and the National Cancer Institute (NCI) joined NICHD in supporting the initiative. The primary purpose of the WRHR Program, which is currently in its seventh year, is to expand the research capabilities of ObGyn departments and increase the number of ObGyn investigators qualified to conduct state-of-the-art research on women's reproductive health.

In FY 2004, the NICHD Reproductive Sciences Branch (RSB) sponsored a feasibility study in preparation for a future full-scale evaluation of the WRHR Program. The purpose of the feasibility study was three-fold:

- To examine the operations of the 20 WRHR centers funded in FY 1998-1999 and the 84 scholars who participated in the program during each center's first five years, using information provided by the WRHR principal investigators (PIs) and maintained by NICHD in a structured format known as the WRHR database.
- To identify a core set of measures and data sources to allow ongoing program monitoring and evaluation of the WRHR Program.
- To recommend an optimal design for a future full-scale outcome evaluation of the WRHR Program, including potential comparison groups, measures, data collection procedures, and a data analysis plan.

The feasibility study was conducted from August 2004 to June 2005 by an independent contractor, Carlyn Consulting. Marcia Carlyn, Ph.D., served as the senior evaluation consultant for the study. Two advisory committees (an external technical evaluation workgroup and an internal workgroup) met at regular intervals during the study to assess the progress that had been made and provide recommendations to the contractor and NICHD administrators overseeing the project.

Background on the WRHR Program

The WRHR Program was designed to address an urgent need to provide expanded support for academic institutions to help them bridge the gap between obstetrician-gynecologists' clinical training and their achievement of successful independent careers in women's reproductive health research. This need had been identified in several studies, including the 1992 Institute of Medicine (IOM) report, *Strengthening Research in Academic OB/GYN Departments*; the 1997 five-year plan for NICHD's extramural program entitled, *A Research Agenda for the Reproductive Sciences Branch*; and report language in the FY 1998 House Appropriations Report (No. 105-205, July 25, 1997). The IOM committee found that a large majority of Ob/Gyn departments had a poor track record in competing successfully for research funds. The committee concluded that a host of factors deterred ObGyn physicians from embarking on research careers, resulting in "a dearth of physician scientists and clinical investigators who can contribute to advances in the reproductive sciences and serve as role models for students."[1]

To address this need, NICHD developed a new initiative called the Women's Reproductive Health Research Career Development Centers (WRHR) Program. In FY 1998, a Request for Applications (RFA) was issued by NICHD (and co-sponsored by ORWH and NCI) to solicit proposals for WRHR centers. The mechanism of support was the NIH Mentored Clinical Scientist Development Program Award (K12), a type of grant designed to help academic institutions provide physicians with a mentored research experience leading to an independent scientific career. The K12 awards provided five years of funding for each center (up to $400,000 total costs per year) to support a minimum of three WRHR scholars for a period of two to five years, each of whom would be given at least 75% protected time for research-related activities. Scholar candidates must have earned an M.D. degree or its equivalent and must have completed a postgraduate residency program in obstetrics-gynecology. Centers were encouraged to recruit underrepresented minorities, women, and candidates with disabilities. If justified, center funds could also be used to help support a core laboratory to provide scholars with technical services to enhance their research experience and career development. Institutions receiving WRHR awards were expected to provide scholars with two types of training based on their individual needs: (1) didactic training in basic, clinical, and/or translational research; and (2) an intensive research experience under the general guidance of a qualified mentor. An emphasis was placed on promoting multidisciplinary research relevant to obstetrics and gynecology and its subspecialties: maternal-fetal medicine, gynecologic oncology, and reproductive endocrinology and infertility. Relevant fields such as adolescent gynecology, urogynecology, and the reproductive health of women with disabilities were also included. It was required that the principal investigator of the WRHR center be the chair of the institution's ObGyn department (or equivalent), with an option to have a co-investigator serve as the program director. Each center was also required to have an internal advisory committee responsible for evaluating applications from WRHR scholar candidates, assessing the overall conduct of the center, and making recommendations to the principal investigator.

[1] Committee on Research Capabilities of Academic Departments of Obstetrics and Gynecology, Institute of Medicine. *Strengthening Research in Academic OB/GYN Departments* (National Academies Press, Washington, D.C., 1992), p. 230.

WRHR Centers Funded in FY 1998-1999

A total of 12 institutions received WRHR awards in response to the initial RFA issued in FY 1998. The RFA was reissued in FY 1999 and 8 additional grants were awarded. Altogether, 20 WRHR centers located in ObGyn departments at major research institutions across the U.S. were funded in FY 1998-1999, as shown below.

Centers Funded in FY 1998	Centers Funded in FY 1999
Magee-Women's Hospital	Brigham and Women's Hospital
Oregon Health and Science University	Case Western Reserve University
Stanford University	Columbia University Health Sciences Center
University of California Los Angeles	University of Alabama at Birmingham
University of California San Francisco	University of California San Diego
University of Cincinnati	University of Colorado Health Sciences Center
University of Pennsylvania	University of Rochester
University of Texas Health Sciences Center at Houston	University of Utah
University of Texas Medical Branch at Galveston	
University of Washington	
Wake Forest University Health Sciences Center	
Wayne State University	

Additional information on the 20 WRHR centers is presented in Exhibit 1.

NICHD sponsored several group meetings for WRHR participants during the program's first few years, including an annual WRHR Center Directors' Meeting (held in the spring starting in 1999). Some of the directors' meetings were held in Bethesda, Maryland, and some were held at WRHR centers. A two-day WRHR Scholars' Research Symposium, held in Bethesda in the spring of 2003, offered scholars an opportunity to give oral and poster presentations of their research projects. Later that year (in October 2003), a workshop was held entitled, "The WRHR Program: Transition to Independence for Physician Scientists." The workshop included presentations by NIH administrators and WRHR participants (PIs, PDs, and scholars) and discussion sessions on various challenges and opportunities for ObGyn physicians embarking on a research career.

The first five years of WRHR funding ended in FY 2003-2004 and a third RFA for WRHR centers was issued in FY 2003. The present feasibility study focused exclusively on the 20 WRHR centers that were funded in FY 1998-1999 and did not include the centers that received their first WRHR grant after FY 1999.

SECTION 2:
FEASIBILITY STUDY METHODOLOGY

The following methodologies were used to obtain information on the WRHR Program and assess the findings with respect to the 20 centers funded in FY 1998-1999 and their scholars::

- Meeting at regular intervals with an external technical evaluation workgroup and an internal workgroup.
- Conducting in-person and telephone interviews with key stakeholders serving in different roles with respect to the WRHR Program.
- Analyzing the content of the WRHR database to understand WRHR center operations, identify a core set of measures and data sources to allow ongoing program monitoring of the WRHR Program, and determine the optimal design for a full-scale outcome evaluation.
- Conducting pilot tests involving six WRHR centers and their 27 WRHR scholars to assess the feasibility of collecting relevant data items from secondary data sources and provide detailed information on a sample of 30% of the centers and 32% of the scholars. The pilot tests included performing database queries of the NIH IMPAC II system (QVR, CRISP database) and the National Library of Medicine's PubMed database.
- Analyzing the content of WRHR publications and program records (e.g., WRHR RFAs, grant applications, summary statements, annual progress reports, budget information, and official correspondence between WRHR centers and NICHD).
- Analyzing the content of other documents produced by NIH and external organizations (e.g., RFAs for other K12 programs, the 1992 IOM Report).
- Obtaining information from websites maintained by NICHD, other NIH components, and WRHR centers.

This section describes the important roles played by the two advisory committees and the key stakeholders who were interviewed during the feasibility study. It also includes the results of the WRHR database analysis and pilot tests.

Advisory Committees

At regular intervals during the course of the feasibility study, a ten-member technical evaluation workgroup was convened to provide external advice to NICHD and the evaluation team. The workgroup consisted of distinguished researchers and administrators from WRHR centers as well as two WRHR scholars, a maternal-fetal medicine specialist recommended by a professional society, and a member of the NICHD Director's staff. The members of the

Technical Evaluation Workgroup are presented in Exhibit 2. The charge to the workgroup was to assess the different components of the proposed design for the full-scale evaluation, review the draft final report, and recommend ways in which the study design and final report could be improved (see Exhibit 3). Four conference calls were held with the members of the workgroup, and their conclusions and recommendations are incorporated in this report.

An NICHD internal workgroup was also formed and met approximately once a month during the course of the feasibility study to address emerging issues and provide recommendations on the feasibility study and proposed evaluation design. The seven-member workgroup included NICHD staff from the Office of Science Policy, Analysis and Communication (the office responsible for overseeing NICHD evaluations), staff from the Reproductive Sciences Branch, and the senior evaluation consultant for the study. The members of the internal workgroup are presented in Exhibit 4.

Interviews with Key Stakeholders

As part of the feasibility study to design a full-scale outcome evaluation of the WRHR Program, an in-person interview was held with the Deputy Director of NICHD and telephone interviews were conducted with eight other individuals (five men and three women) serving in different roles with respect to the WRHR Program. Their roles included: principal investigator, program director, mentor, scholar, and a leader of a major professional association. The stakeholders were interviewed individually by the senior evaluation consultant for the feasibility study. Discussion guides were used to structure the interviews, which focused on a variety of issues relevant to the evaluation design and improving the overall program (see Exhibits 5 – 7). The telephone interviews ranged from 45 to 70 minutes, averaging 54 minutes in length. The findings from the telephone interviews were summarized and provided to NICHD, with special care taken to ensure confidentiality and minimize the possibility that a specific response could be attributed to particular participant.

The interviews with key stakeholders proved to be very helpful to the design of the WRHR evaluation. The themes that emerged during the discussions, which are summarized below, will be emphasized in the full-scale evaluation of the WRHR Program.

WRHR center characteristics likely to predict success. Given the major financial challenges that ObGyn departments are facing at the present time (diminishing reimbursements for clinical care, rising liability insurance costs, high salaries for ObGyn physicians, rising costs of startup packages for new research faculty, tighter NIH research funding), the consensus of the stakeholders was that the departments selected as WRHR centers "must be exceptional." The following center characteristics were viewed as being the most important for achieving the goals of the program:

- Previous research experience (especially in women's health research).
- Experience in research training (especially training MDs to do research).
- Involvement of several departments, including basic science departments.
- Strong institutional and departmental support for women's health research.

WRHR scholar characteristics likely to predict success. Scholars with the following characteristics were viewed as being most likely to achieve the goals of the program:

- Previous research experience (beyond the usual residency/fellowship requirements), resulting in some peer-reviewed publications.
- Strong interest in pursuing a research career and excitement about a particular research area.
- Ability to be patient and handle delayed gratification.
- Ability to manage time well when faced with competing demands.

WRHR center activities likely to predict success. The following center activities were regarded as being the most important for achieving the goals of the program:

- Giving a lot of attention to one-on-one mentoring, with ideal mentors being senior researchers who have previous experience training clinicians, serving on NIH study sections, providing career advice, and teaching grantsmanship and the skills needed to run a successful laboratory. Mentors should also be willing and able to meet with the scholar regularly (at least biweekly), should help scholars meet leaders in their field, should be enthusiastic about the scholar's research interests, and should provide support if the scholar becomes discouraged. A scholar may need more than one mentor to ensure that all of these areas are addressed.
- Ensuring that scholars have 75% protected time for research. Guaranteeing scholars this amount of release time was viewed as being critical to the centers' success, especially given the scholars' clinical responsibilities and the financial challenges that ObGyn departments are currently facing.
- Providing scholars with other types of research support, especially adequate research space, lab technicians, and access to core research facilities.
- Using the WRHR advisory committee effectively, specifically in the selection of scholars, assessment of their progress, and assessment of the progress of the center as a whole. Two advisory committees (internal and external) may be needed.
- Using a variety of strategies to recruit a diverse group of scholars interested in research careers, recognizing that it is very hard to recruit underrepresented minorities.

Stakeholder recommendations for improving the program. In addition to providing information helpful to the evaluation design, the respondents offered several suggestions to NICHD on ways the WRHR Program could be improved, including the following:

- In planning future group meetings that involve WRHR scholars, poll the scholars before each meeting to identify topics they would like to discuss, offer breakout sessions for scholars to discuss these topics with senior investigators (including NIH researchers) having expertise in the different areas, and schedule informal networking activities involving only scholars to encourage them to get to know each other and possibly discuss future collaborations.

- Ensure quality control for the WRHR Program (a major purpose of the full-scale evaluation).
- Expand WRHR study sections to include researchers from a variety of fields.
- Consider dropping the requirement that only ObGyn department chairs can be WRHR principal investigators.
- Maintain a continuity of WRHR funding in future years if at all possible.
- Revise program requirements to be more flexible with respect to scholar entry dates and the length of the minimal training period.
- Consider developing a national database of underrepresented minorities in ObGyn who are interested in research careers.
- Reach out to the ObGyn community (including department chairs, researchers, and representatives from the major certification groups and professional societies) by sponsoring roundtable discussions to address the major issues that ObGyn departments are currently facing which are having a direct effect on their research and research training activities.

All of the stakeholders who were interviewed commented that the WRHR Program is a very worthwhile initiative designed to address critical needs, most importantly the need to expand the research capabilities of ObGyn departments and increase the number of well-trained ObGyn physician scientists in the U.S.

WRHR Database Analysis

A major component of the feasibility study was an analysis of the information collected from WRHR PIs and maintained by RSB staff in a file format known as the WRHR database. The database is an innovative management tool designed to provide NICHD administrators ready access to key information on WRHR centers and scholars. It has been used since 2003 for internal purposes in the management of the WRHR Program and was not designed to assess the progress of individual centers or compare the centers with each other. Given that caveat, an analysis of the database was conducted to examine its usefulness in understanding WRHR center operations, monitoring the progress of the WRHR centers/scholars at regular intervals, and conducting a full-scale outcome evaluation of the WRHR Program.

The current WRHR database consists of two MS Excel files, one of which includes data on each of the 20 WRHR centers funded in FY 1998-1999 (30 data items); the other file includes data on each of the 84 WRHR scholars who participated in these programs during their first five years (33 data items). Many of the data items have extensive comments embedded in the spreadsheets which describe the center's recruitment efforts, program evaluation strategies, core labs, major program accomplishments, and detailed information on individual scholars. Most of the information was submitted by the WRHR PIs in September-October 2003 in response to a special request from NICHD staff. However, the database also includes information submitted to the WRHR program officer at various times after October 2003. As part of the database

analysis, individual data items were assessed with respect to the wording of the request for information, the accuracy of the data provided by the WRHR PIs, and the potential usefulness of the data in evaluating the WRHR Program.

The analysis of the WRHR database provided a wealth of information that was helpful in understanding the operations of the 20 WRHR centers during the program's first few years. These findings are presented in Section 3 of this report. The database analysis also provided information relevant to addressing the other objectives of the feasibility study: (1) identifying a core set of measures and data sources to allow ongoing monitoring of the WRHR Program; and (2) recommending an optimal design for a future full-scale outcome evaluation of the WRHR Program (the proposed design is presented in Section 4).

Although the WRHR database was developed for internal purposes, the analysis of the information submitted by the PIs and entered into the database proved to be very helpful in identifying ways NICHD could monitor the progress of the WRHR centers and scholars before and/or after the full-scale evaluation of the WRHR Program. For example, the analysis revealed that the centers had reported information in different ways about their scholars' accomplishments (e.g., presentations, abstracts, journal articles, other publications, honors and awards, promotions, other recognition, NIH grant awards, other federal grants, other grant support, and number of research projects). Specifically, some centers had reported only invited oral presentations and some had included poster presentations; some centers had reported only research presentations at national or international conferences and some had included clinical presentations at local meetings; some centers had listed only peer-reviewed research papers and some had included articles that were probably not peer-reviewed and/or did not involve research studies (e.g., case studies describing clinical issues); and some centers had listed honors/awards for teaching and some had focused primarily on research accomplishments. With respect to scholars' grant support, it was not always possible to determine the scholar's role on particular grants listed (e.g., principal investigator, co-investigator, subproject leader, another role on the research team). These differences in reporting do not diminish the usefulness of the WRHR database as an internal management tool for NICHD administrators (its primary purpose), but they should be addressed if the database is to be used in future program evaluation efforts.

To monitor the progress of the WRHR centers and scholars before and/or after the full-scale evaluation, it is recommended that NICHD develop a systematic process for collecting specific data items at regular intervals (e.g., every 1-2 years). To assist NICHD in this endeavor, findings of the WRHR database analysis have been summarized in Exhibit 8 entitled, Recommended WRHR Data Items for Use in Tracking Center and Scholar Performance. The table includes information on each data item that is currently being collected for the WRHR database as well as additional data items that are recommended for the full-scale evaluation. Several approaches could be used by NICHD to collect specific information at regular intervals:

- Ask the WRHR PIs to answer a set of questions about their center and scholars (as was done to develop the WRHR database in FY 2003), using the results of the feasibility study to ensure that the questions are phrased as clearly as possible based on the operational definitions developed as part of the feasibility study;

- Examine the extent to which the annual progress reports submitted by WRHR PIs as part of their Type 5 noncompetitive renewal applications could be used to collect key data items identified during the feasibility study (e.g., center activities and scholar accomplishments), thereby reducing the need for WRHR center staff to answer special requests for data;
- Design and implement web-based surveys to collect current information from the WRHR PIs, PDs, and scholars; and/or
- Collect key information on each WRHR center and scholar from some of the secondary data sources recommended for the full-scale evaluation (e.g., PubMed, the IMPAC II database using QVR, and the WRHR annual progress reports), using the procedures and operational definitions developed as part of the feasibility study.

To improve the reliability and validity of the information collected and minimize the burden on site personnel, it is recommended that secondary data sources be used whenever possible rather than relying on self-reported data. However, selecting the best approach will depend on which data items are of most interest to NICHD and the amount of resources that are available to RSB administrators (such as staff support and computer expertise).

Pilot Tests for Collecting Secondary Data

Pilot tests were conducted to assess the feasibility of collecting key data items from secondary data sources. The tests involved six WRHR centers funded in FY 1998-1999 and the 27 scholars who participated in the program during the centers' first five years. The pilot sites were selected using a process to help ensure that they were reasonably representative of the larger group of WRHR centers. The following selection criteria were used:

- Institution's overall research experience.
- Previous research experience of the initial principal investigator.
- Geographic location.

The six pilot sites represented 30% of the WRHR centers funded in FY 1998-1999 and 32% of the WRHR scholars who participated in the program during the centers' first five years.

The results of the pilot tests are presented in Exhibits 9 and 10; the tables were designed to serve as a snapshot of the six centers and their scholars. In addition to the WRHR database, other data sources were used to obtain information that was current as of April 2005 (e.g., IMPAC II, PubMed, web searches, NIH award database). The names and other identifying features of the pilot centers and their scholars were provided to NICHD but are not shown in this report to protect confidentiality. In addition to providing detailed information on each of the six WRHR centers and their 27 scholars, the pilot tests also proved to be very helpful in developing operational definitions and recommended data sources for key variables. The operational definitions and data sources recommended for the full-scale outcome evaluation of the WRHR Program are presented in Exhibit 11. The definitions and data sources will also be useful to NICHD in monitoring the progress of the WRHR centers and scholars.

SECTION 3:
FINDINGS ON WRHR CENTER OPERATIONS

The following summary of WRHR center operations is based primarily on information provided by the WRHR PIs in September-October 2003 and summarized in the WRHR database. Although the WRHR database was developed for internal purposes and was not designed to compare the centers with each other, the database proved to be very helpful in understanding WRHR center operations.

Filling Scholar Positions

A total of 70 scholar positions ("slots") were requested by the group of 20 WRHR centers when they were first funded in FY 1998-1999 and 60 scholar positions were approved by NICHD, with each center receiving approval for three positions. The following recruitment efforts were reported by the PIs:

- Placing ads in professional journals describing their WRHR program (12 centers).
- Publicizing their WRHR program at national ObGyn meetings through announcements and distribution of a brochure or flyer (10 centers).
- Sending letters to ObGyn chairs at other institutions (10 centers, three of which also sent letters to directors of fellowship and/or residency programs).
- Initiating informal contacts with colleagues at other institutions, primarily at national meetings (9 centers).
- Publicizing their WRHR program on their ObGyn department website (8 centers, one of which also posted information on the websites of relevant professional and scientific organizations).
- Making a special effort to encourage underrepresented minority candidates to apply (6 centers).

The general consensus of the PIs and PDs at the first WRHR Center Directors' meeting (based on notes taken by the NICHD Program Officer) was that contacting their colleagues was a more effective strategy than journal ads or flyers for identifying eligible scholar candidates.

The WRHR database analysis revealed that there was substantial variability among the 20 centers with respect to the number of scholar applicants (ranging from 5 to 25) as well as the percent of applicants who were successful in becoming WRHR scholars (ranging from 12% to 100%). The centers also varied with respect to the average number of months it took them to fill their first scholar position, which ranged from 0 to 12 months (averaging 5.3 months for the group as a whole). It took longer for the centers to fill all three scholar positions approved by

NICHD, with the time ranging from 4 to 46 months (17.3 months for the group as a whole). In general, the centers funded in FY 1998 filled their first three scholar positions much more quickly than the centers funded in FY 1999; the average time was 13.1 months for the FY 1998 centers and 23.5 months for the FY 1999 centers. Within the first five years, each center had recruited between 3 and 6 WRHR scholars (the average was 4.3 scholars), depending on the center's ability to fill vacant positions in a timely way and depending on how many positions had become available as scholars completed the program or left the program for other reasons.

Scholar Characteristics

The WRHR database was used to summarize the baseline characteristics of the 84 scholars who participated in the WRHR Program during each center's first five years with respect to their sex, race/ethnicity, previous training, and stage of career. The demographic results showed that 46 scholars (55%) were female but only 6 scholars (7%) were members of underrepresented minority groups (4 were Hispanic and 2 were non-Hispanic African Americans). One reason for the low percentage of underrepresented minority scholars may be because only 6 centers (30%) reported making a special effort to encourage such candidates to apply to the program. Of the 84 scholars, 83 had an M.D. degree and one had a D.O. degree when they joined the program and 30 scholars (36%) had an additional advanced degree. Specifically, 11 scholars (13%) had a Ph.D. degree, 14 scholars (17%) had an M.P.H. degree, and 7 scholars (8%) had another type of master's degree (2 scholars had more than one additional advanced degree). The average time since the scholars had completed their ObGyn residency was 4.8 years (5.4 years for the centers funded in FY 1998 and 3.9 years for those funded in FY 1999). A total of 66 of the 84 scholars (79%) were board certified in General Obstetrics and Gynecology when they joined WRHR, although the percentage was higher for the centers funded in FY 1998 (86%) than for those funded in FY 1999 (68%). With respect to subspecialty training, 31 scholars (37%) were certified in an ObGyn subspecialty when they joined WRHR, with little difference between the two cohorts; 12 scholars (14%) were certified in maternal-fetal medicine, 12 scholars (14%) in reproductive endocrinology and infertility, and 7 scholars (8%) in gynecologic oncology. In addition, 2 scholars (2%) had subspecialty training in urogynecology (subspecialty board certification in urogynecology is not available).

With respect to the scholars' academic rank prior to joining WRHR, 4 scholars (5%) were associate professors, 39 scholars (46%) were assistant professors, 32 scholars (38%) were instructors or fellows, and 9 scholars (11%) were residents (none of the residents held an academic position). The centers funded in FY 1998 recruited a larger percent of their scholars from faculty positions, with 30 of the 52 scholars in the cohort (58%) being associate or assistant professors. In contrast, 13 of the 32 scholars in the FY 1999 cohort (41%) held a faculty position (all were assistant professors) prior to WRHR. Also, only 2 scholars in the first cohort (4%) were residents when they were recruited, compared to 7 scholars in the second cohort (22%). Evidence was found suggesting that some centers may have been recruiting scholars who were overqualified for the WRHR Program. For example, one PI reported to NICHD staff that a scholar candidate "who was scheduled to come onto the WRHR program six months ago [but was unable to do so] was since awarded an R01 grant." With respect to the type of research individual scholars were pursuing (based on the PIs' reports), 27 scholars (32%) were conducting

basic research, 14 scholars (17%) were conducting translational research, 30 scholars (36%) were conducting interdisciplinary research, and 13 scholars (15%) clinical research (although the categories were not explicitly defined).

Mentors

Each WRHR scholar is required to have a primary mentor who is an independent investigator and has experience providing research training. Based on the information in the WRHR database, all of the 84 scholars were assigned at least one mentor and 21 scholars (26%) had more than one mentor. The practice of assigning multiple mentors varied by institution, with 6 WRHR centers (30%) using "team mentoring" for more than one scholar, and 10 centers (50%) never using this approach. At many centers, the WRHR PI and/or PD also served as a mentor for one or more scholars. Specifically, the PI served as a mentor at 6 centers (30%) and the PD served as a mentor at 8 centers (40%).

Core Laboratory

With strong justification, a scientific core laboratory could be requested as a component of a WRHR center in order to provide skilled technical services to complement and extend the capabilities of the mentors in promoting the career development of the WRHR scholars. WRHR funds could be allocated to a core lab director (up to 50% effort) and other technical staff, lab supplies, equipment and maintenance, and the institution's commitment to the core lab must be clearly demonstrated. Based on the information in the WRHR database, only 3 of the 20 WRHR centers funded in FY 1998-1999 (15%) chose to establish a new core lab facility within their ObGyn department. The core labs at all three centers provided scholars with hands-on training in molecular biology techniques (two also emphasized imaging techniques), provided laboratory services for the scholars research projects, and the core director and lab techs helped the scholars interpret the results. Although the other 17 centers did not establish a new facility, their scholars had access to existing core labs at the institution as well as the laboratories of their mentors, and many of the centers allocated a portion of their administrative budgets to laboratory support (e.g., for technicians, supplies, reagents, small equipment). Whether or not a WRHR center established a new core laboratory, its annual budget for administrative and laboratory costs was limited to $100,000.

Program Evaluation Efforts

A major function of each center's internal advisory committee is to evaluate the center's ongoing research activities and the overall conduct on an annual basis, and the minutes of advisory committee meetings are to be included in the center's annual progress report. Because the minutes were not always submitted, it was difficult to determine the extent to which this requirement was met. When asked in September 2003 if they had evaluated their WRHR program, 15 of the 20 centers (75%) reported that they had. In addition, 8 of the 20 centers (40%) reported that during their first five years they had invited experienced researchers from other institutions to conduct independent evaluations of their program and the progress of their

scholars. The PIs reported that the external advisers had offered a variety of suggestions for improving their programs, including the following:

- Develop more extensive recruitment strategies and implement a more rigorous selection process to identify applicants who are fully committed to academic research careers (e.g., applicants could be asked to submit a formal research proposal in collaboration with their proposed mentor and present the proposal to the internal advisory committee).
- Require scholars to take courses or workshops to learn grantsmanship skills early in the program.
- Encourage many scholars to apply first for a small grant (e.g., R03) to gain grantwriting experience and obtain preliminary data before they apply for a more extensive R01 grant.
- Require the center's internal advisory committee to meet at least once a year and produce minutes of each meeting.
- Ensure that the scholars are meeting with their mentors on a regular basis (e.g., weekly or bi-weekly).
- Provide continued mentoring for former scholars in the early years of their academic careers.

Reported Program Accomplishments

When asked in September 2003 to identify their major program accomplishments, all of the 18 responding PIs mentioned that the development of the research careers of their WRHR scholars was a major achievement. Specifically, the following scholar accomplishments were cited most often (the number of centers mentioning each type of achievement is listed in parentheses):

- Obtaining institutional, foundation, and/or private sector research grants (9).
- Publishing research in peer-reviewed journals (7).
- Obtaining NIH grants (5)
- Obtaining an advanced degree (5).
- Giving presentations at national conferences (5).
- Achieving professional awards and/or advancement (5).
- Improving grantsmanship skills (4).
- Mentoring postdoctoral fellows, medical students, and/or laboratory staff (2)

Departmental and institutional accomplishments were also cited as benefits of the WRHR program, including:

- Enhancing collaborations between the clinical researchers in the ObGyn department and basic science researchers in other departments (3).
- Strengthening the recruiting efforts of the department's fellowship programs (1).

- Developing a new course tailored to scholars' needs (1).
- Promoting research discoveries (1).

Scholar Success

Based on the information in the WRHR database, 9 of the 84 scholars (11%) had earned an additional degree as part of the WRHR Program as of October 2003. Specifically, 2 scholars had earned a Ph.D. degree, 3 had earned an M.P.H. degree, and 4 had earned another type of master's degree. In addition, 23 scholars (27%) were reported as having achieved the completion goals established by the center (which varied depending on the center) and 13 scholars (15%) had left the program prematurely for a variety of reasons (5 resigned because they wanted a non-research career as a physician, 4 resigned because they transferred to a non-WRHR institution, 4 resigned for family reasons, and 1 resigned for health reasons). The remaining 48 scholars (57%) were still in the program as of October 2003. Based on the results of the pilot tests, many of these scholars subsequently completed the WRHR program goals. Altogether, 71 scholars (85%) had either completed the program or were still active participants as of October 2003.

In addition to the data on scholar success provided by the WRHR database analysis and pilot tests, CRISP database searches were conducted to determine how many of the 84 WRHR scholars were successful in competing for NIH research grants. With respect to R01 grants, 12 of the 84 scholars (14%) had been awarded an R01 as of April 2005. Not surprisingly, the percentage with R01s was higher for the scholars at centers funded in FY 1998 than for the scholars at centers funded in FY 1999 (19% vs. 6%). In fact, two of the scholars in the first cohort had each received two R01s by April 2005. Of the 14 R01 grants, 9 of them (64%) were sponsored by NICHD, two by NHLBI, and one each by NIDDK, NCCAM, and AHRQ. On average, the scholar's first R01s were awarded 3.6 years after the scholars had started the WRHR Program.

With respect to all competitive NIH grants awarded to scholars after they joined the WRHR Program, the following results were found for the group of 84 scholars:

Type of Grant	Number of Grants Awarded to WRHR Scholars
R01	14
R03	5
R21	2
U01	1
U10	1
K08	2
K23	2
P51 subproject	1

As of April 2005, 28 competitive NIH grants had been awarded to WRHR scholars. Of the overall group, 21 of the 84 scholars (25%) had been awarded at least one competitive NIH grant; 5 of these scholars were exceptional in having received two or three grants within this relatively short period of time. As expected, the percentage of scholars who received a competitive NIH grant was higher for the scholars at centers funded in FY 1998 than for those at centers funded in FY 1999 (27% vs. 21%).

Competing successfully for an NIH research grant is only one measure of scholar success. Several other indicators of scholar success were assessed during the feasibility study. The results are presented in the proposed design for the full-scale evaluation of the WRHR Program (see Section IV).

SECTION 4:
PROPOSED DESIGN FOR THE FULL-SCALE EVALUATION

The primary product of the feasibility study was a proposed design for a future full-scale outcome evaluation of the WRHR Program, which is described in this section. The proposal is written in a format compatible with the *NIH Program Evaluation Guide*, which is to be used by program staff who are seeking NIH Evaluation Set-Aside Funding for program evaluations.

Introduction

NICHD is planning to conduct a full-scale outcome evaluation of the Women's Reproductive Health Research Career Development Centers (WRHR) Program. The full-scale evaluation will focus on the 20 WRHR centers that were initially funded in FY 1998-1999 and the 84 scholars who participated in the program during each center's first five years (Years 1-5). The study will examine how the participating WRHR centers implemented activities recommended by NIH and will assess the extent to which the centers and their WRHR scholars achieved specific program goals during this period. The study will also examine whether baseline characteristics of the centers and scholars as well as the activities they conducted during the five-year period were related to subsequent success in achieving the goals.

Logic Model

The evaluation will be based on a logic model illustrating how the WRHR Program is intended to work (see Exhibit 12). The model was developed during the feasibility study and proved to be an excellent tool for identifying the assumptions underlying the program, designing the evaluation, and communicating with diverse audiences. This type of visual diagram (sometimes called a conceptual framework) illustrates how specific resources, baseline characteristics, and program activities are hypothesized to influence the subsequent achievement of program goals. The proposed logic model for the WRHR evaluation identifies 13 *outcome variables* (7 short-term program goals, 4 long-term program goals, and 2 overarching program goals). The model also includes 24 *predictor variables* (6 center characteristics, 12 scholar characteristics, and 6 types of center activities) which are expected to be related to success in achieving the program's goals. NIH resources and activities supporting the WRHR Program are also included in the logic model. Proposed operational definitions and data sources for all of the variables in the logic model are presented in Exhibit 11.

Study Questions

Questions involving predictor variables

1. What were the major requirements of the *WRHR Program*, and what level of NIH resources (in terms of funding and staff support) was allocated to the program during its first five years? To what extent did NIH staff address the needs of the participating centers and help ensure that program requirements were being met? How could the program and its administration be improved in the future?

2. What were the *baseline characteristics* of the WRHR *centers* prior to the start of the program in each of the following areas?

    - Institution's overall research experience
    - Institution's previous experience in women's reproductive health research
    - Institution's experience with other research training and career development programs
    - Previous research experience of PI and PD
    - Number of participating departments
    - Research areas proposed for WRHR.

3. What were the *baseline characteristics* of the WRHR *scholars* at the time they joined the program in each of the following areas?

    - Number of previous scientific publications
    - Amount of previous research-related experience
    - Amount of previous experience applying for NIH research grants
    - Research area to be pursued
    - Number of advanced degrees
    - Number of ObGyn board certifications
    - Subspecialty training
    - Years since completing residency
    - Academic rank
    - Sex and race/ethnicity
    - Mentor's previous research experience
    - Mentor's previous mentoring experience.

4. To what extent did the WRHR centers implement the following *program activities* recommended by NIH?

    - Identifying and recruiting promising scholars, especially underrepresented minorities
    - Offering formal training in research and grantsmanship
    - Providing research support to scholars
    - Ensuring that scholars' research time is protected
    - Providing scholars with extensive one-on-one mentoring
    - Working with the internal advisory committee.

With respect to recruitment, how many centers were successful in recruiting scholars from outside their institution? What strategies were used to recruit underrepresented minorities? With respect to mentoring, how many scholars were mentored by the WRHR PI or PD? How many were mentored by a mentoring team?

Questions involving outcome variables

5. To what extent did the WRHR *centers* achieve the following *short-term goals*?

    - Successfully recruiting a diverse group of scholars
    - Filling scholar positions in a timely way
    - Having few scholars leave the program prematurely.

    How many centers were successful in recruiting scholars from underrepresented minority groups during their first five years? How many scholars were women and how many were African American, Hispanic, and members of other minority groups? On average, how much time did it take for a center to fill all of its initial scholar positions? What proportion of scholars dropped out of the program prematurely? What were the primary reasons for dropping out? What proportion of scholars who left prematurely ended up pursuing a career involving women's reproductive health research? What proportion of scholars earned an advanced degree during their participation in the WRHR Program?

6. To what extent did the WRHR *centers* achieve the following *long-term goals*?

    - At least 50% of scholars becoming independent research scientists in women's reproductive health research
    - Increased institutional commitment to women's reproductive health research.

7. To what extent did the WRHR *scholars* achieve the following *short-term goals*?

    - Publishing research in scientific journals
    - Giving presentations at scientific meetings
    - Applying for research grants
    - Competing successfully for a research grant of any type.

8. To what extent did the WRHR *scholars* achieve the following *long-term goals*?

    - Pursuing a career involving women's reproductive health research
    - Becoming an independent research scientist.

    Of the scholars who were successful in becoming independent research scientists, how long did it take them (on average) to obtain their first major research grant? What percent of their salary was supported by the grant? How many scholars received more than one major research grant within three years after completing WRHR? How many were successful in getting a research grant renewed? Three years after WRHR, what percent of professional effort was protected time for research? Which type of research and area of women's reproductive health research did they pursue? How many scholars chose the same research area as their mentor? How many stayed at the same institution?

Questions involving the relationship between predictor and outcome variables

9. Why were some WRHR *centers* more successful than others?

   To what extent were specific center characteristics related to their subsequent success in achieving WRHR goals? Comparing the more successful and less successful centers, can "centers with strong potential" be identified from their baseline characteristics?

   To what extent were specific center activities related to their subsequent success in achieving WRHR goals? For example, which strategies proved to be most successful in recruiting a diverse group of scholars? Were the WRHR centers that had a lower turnover rate for their senior investigators (principal investigator, program director, and mentors) more successful than those that those that had a higher turnover rate? Comparing the approaches used by the more successful and less successful centers during their first five years, can "best practices" for centers be identified? If so, how was each practice usually implemented?

10. Why were some WRHR *scholars* more successful than others?

    To what extent were specific *scholar characteristics* related to the scholars' subsequent success in achieving WRHR goals? Were the scholars who pursued careers in basic research more (or less) successful than the scholars who pursued careers in clinical or translational research? Were the scholars who pursued careers in emerging areas of women's reproductive health research more (or less) successful than the scholars who pursued careers in well-established areas of women's reproductive health research? Were the scholars who pursued an additional academic degree as part of the WRHR program more (or less) successful than the scholars who did not pursue a degree? What were the primary reasons given by the subset of scholars who decided not to pursue research at this stage of their career and left the program prematurely? Comparing the more successful and less successful scholars, can "scholars with strong potential" be identified from their baseline characteristics?

11. What makes a good *mentor*?

    Were the scholars who were mentored by the WRHR PI or PD more (or less) successful than those who had other mentors? Were the scholars who had both a research mentor and a mentor who advised them with respect to career and clinical issues more (or less) successful than those who had only a research mentor? Is there evidence that mentors' previous research and training experience (including experience mentoring physicians) and mentoring styles (e.g., scheduled vs. unscheduled meetings with the scholar) are related to scholars' success? Is there evidence that different types of scholars do better with different types of mentors or mentoring approaches? Comparing the more successful and less successful scholars, can "best practices" for mentors be identified? If so, how was each practice usually implemented?

Questions involving external comparison groups

12. Comparing the WRHR *scholars* with a comparable group of ObGyn physicians in FY 1998-1999 who were interested in pursuing research careers, were the WRHR scholars more (or less) successful than the non-WRHR physicians in competing for NIH grants and publishing research in scientific journals in FY 2004-2005?

13. Comparing the WRHR ObGyn *departments* with a comparable group of non-WRHR ObGyn departments having similar levels of experience in women's reproductive health research in FY 1996-1997, were the WRHR ObGyn departments more (or less) successful than the non-WRHR ObGyn departments in competing for major NIH grants involving women's reproductive health research in FY 2004-2005?

14. Comparing the WRHR *institutions* with a comparable group of institutions having similar levels of experience in women's reproductive health research in FY 1996-1997, were the WRHR institutions more (or less) successful than the non-WRHR institutions in competing for major NIH grants involving women's reproductive health research in FY 2004-2005?

The 14 study questions address all of the variables in the logic model except for the two overarching program goals involving the long-term impact on ObGyn physician scientists and WRHR departments, which are not expected to be achieved until 15-20 years after the start of the WRHR Program.

Data Collection and Analysis

Target populations. To answer the study questions, information is needed with respect to two target populations: the 20 WRHR centers that were initially funded in FY 1998-1999 and the 84 scholars who participated in the program during each center's first five years (Years 1-5). The study will focus on two units of analysis (individual centers and individual scholars) and data will be collected for all of the centers and scholars.

Using the variables in the logic model and their operational definitions, information will be collected on (1) each center's baseline characteristics, activities, and performance; and (2) each scholar's baseline characteristics and performance. Information will also be collected on a comparable group of ObGyn physicians, ObGyn departments, and academic institutions to obtain insight on the effectiveness of the approach to research training that was used for the WRHR Program. Specifically, was there evidence that NICHD's decision to use the research training center model rather than the more traditional model where trainees are assigned to individual investigators' laboratories "added value" in terms of enhancing the research careers of ObGyn physicians and the institutions' commitment to women's reproductive health research?

Data sources. A variety of data sources are recommended for the full-scale evaluation of the WRHR Program, based on the results of analyses and pilot tests conducted during the feasibility study. With respect to *primary data*, the following data sources are recommended for the full-scale evaluation:

- Participants serving in different roles at each of the 20 WRHR centers funded in FY 1998-1999 (principal investigator, program director, scholars, mentors, advisory committee members, and senior administrators).
- NICHD staff (program and grants management staff who have been involved with the WRHR Program).

With respect to *secondary data*, the following data sources are recommended

- Initial RFAs for the WRHR Program (issued by NICHD in FY 1998 and 1999).
- NIH IMPAC II database (which includes the Consolidated Grant Applicant File and the CRISP database).
- NIH award database.
- WRHR grant applications, annual progress reports, and official correspondence (including CVs and biosketches of scholars and mentors).
- WRHR center annual budgets approved by NIH.
- WRHR database maintained by the NICHD Reproductive Sciences Branch (RSB).
- PubMed.
- Websites for NIH, WRHR centers and institutions, and other academic institutions.
- Association of American Medical Colleges (AAMC) Faculty Roster database.
- American Board of Medical Specialties (ABMS) Directory.

Data collection strategies. The following strategies are recommended for the collection of *primary data* for the full-scale evaluation:

- Conducting telephone interviews with WRHR participants serving in different roles at the 20 WRHR centers. With respect to the WRHR scholars, three groups will be interviewed: (1) scholars who left the program prematurely; (2) scholars who completed the program and were very successful in achieving the goals for scholars; and (3) scholars who completed the program and were not very successful in achieving these goals.
- Conducting telephone interviews with NICHD program and grants management staff.
- Conducting on-site interviews with WRHR participants serving in different roles at three WRHR centers that were very successful in achieving the program goals for centers and three WRHR centers that were not very successful in achieving these goals.
- Conducting web-based surveys of WRHR participants serving in different roles. The surveys will consist of questionnaires designed for different types of WRHR participants that can be answered on-line.

- Conducting focus groups of WRHR participants serving in different roles. Focus groups may be conducted during annual WRHR meetings, Society for Gynecologic Investigation (SGI) meetings, and/or other national conferences.

The following data collection strategies are recommended for the collection of *secondary data* for the full-scale evaluation:

- Analyzing the content of NIH program documents (e.g., WRHR RFAs, grant applications, annual progress reports, official correspondence).
- Performing searches of NIH databases (e.g., IMPAC II, CRISP, WRHR database) and non-NIH databases (e.g., PubMed, AAMC Faculty Roster, ABMS Directory).
- Reviewing websites developed by NIH, WRHR centers, and other academic institutions.

Different data collection strategies will be used to answer different study questions, as shown in Exhibit 13. The telephone interviews, on-site interviews, and focus groups will be conducted using discussion guides similar to the guides developed and pilot-tested for the feasibility study, which proved to be very effective in obtaining the type of qualitative data needed to answer specific questions.

Clearance requirements. The data collection strategies involving the telephone interviews, on-site interviews, and web-based surveys will require OMB clearance. Because NICHD has generic OMB clearance for conducting surveys of this type, it should be possible to satisfy OMB requirements without excessive delay. The Consolidated Grant Applicant File (CGAF), a component of the IMPAC II database, is covered by the Privacy Act of 1974 and authorization to use the file must be obtained from NIH before the analyses are conducted. In addition, the contract for conducting the full-scale evaluation should include FAR clauses specified by NIH Office of Extramural Research for use of the CGAF, requiring that any individuals extracting data from the CGAF or working with individual-level data obtained from the CGAF have a level 6C security clearance. Use and storage of CGAF data will also follow procedures consistent with clearance requirements.

Data integrity. Several pilot tests of specific data collection strategies were conducted during the feasibility study and the procedures were revised based on pilot test results. In addition to using pretested procedures, the reliability and validity of the study data will be enhanced by conducting training sessions to ensure that the analysts thoroughly understand the data collection and coding procedures as well as the operational definitions of the study variables. In addition, the members of the evaluation team will collect and code data independently using written data collection and coding protocols, and inter-rater reliability checks will be conducted to improve the internal consistency and replicability of the findings. Any cases where the scores differ substantially will be discussed by the study team until a consensus is reached. In addition, agreed-upon algorithms will be used to calculate summary scores for the study variables that involve more than one data source and to calculate an overall success score for each WRHR center and scholar.

Ethical considerations. Participation in the full-scale evaluation will be entirely voluntary and individual responses will be kept strictly confidential in keeping with Privacy Act requirements. The study will address the sensitivities of the study participants by ensuring that respondents will not be identified by name or position in any resultant reports, and findings with respect to grant application and award rates will be reported at an aggregate level that will not allow individual investigators to be identified. Care will also be taken to ensure that the 16 comparison ObGyn departments (and their institutions and trainees) are not identifiable in any study reports in keeping with the NIH policy regarding unsuccessful grant applicants. It is not expected that informed consent will be required for two reasons: (1) all of the information involving the comparison institutions and their trainees will be obtained from secondary sources; and (2) the RFA for the WRHR Program explicitly stated that the WRHR scholars may be contacted after the completion of their career development experiences for periodic updates to obtain information helpful in evaluating the impact of the program. Nevertheless, NICHD's institutional review board (IRB) will be responsible for determining whether the full-scale evaluation is exempt from HHS regulations governing research with human subjects or whether formal IRB approval (including informed consent) is required. In addition to ensuring that all clearance, Privacy Act, and IRB requirements are met, confidentiality agreements will be signed by all members of the evaluation team who will be reviewing grant applications, progress reports, and other information contained in NICHD grant files.

Data preparation. An evaluation database will be created to keep track of the data collected for each of the variables in the logic model. Quantitative data obtained from IMPAC II, the WRHR database, and other electronic databases will be electronically transferred to the evaluation database whenever possible. Relevant qualitative and quantitative information collected during telephone interviews, on-site interviews, document reviews, and website reviews will be transferred to coding sheets and coded (if appropriate) before being entered into the database. User-friendly input screens for entering different types of data will be designed to expedite data entry, and standard data verification procedures (such as edit and range checks) will be developed to validate the data entered and maximize the integrity of the evaluation database.

Other steps will also be taken to prepare the data for analysis, depending on the nature of the variable. Many of the key variables used in the evaluation are quantifiable on a ratio scale (e.g., number of NIH grants received, number of papers published) and will require little additional preparation. Other variables are qualitative in nature (e.g., ensuring that scholars' research time is protected, ensuring that high-quality one-on-one mentoring is provided to scholars), in which case pretested coding procedures based on the variable's operational definition will be used by the analysts to translate the data collected for a particular center or scholar into a 5-point Likert-scale score. For the relatively few variables that are categorical in nature (e.g., research areas proposed by the centers), a nominal scale will be used. The variables are also different in that some consist of only one component and some have several components. For each variable that has more than one component, an algorithm will be developed (based on the operational definition) to calculate a *summary score* for the variable. Specifically, the results for each component will be converted into a standardized *z*-score, with a positive *z*-score indicating an above-average rating and a negative *z*-score indicating a below-average rating. The *z*-score for each component will then be weighted (as specified in the algorithm) to determine the summary

score for the variable. Finally, a similar process will be used to generate an *overall success score* for each center and scholar, using an agreed-upon algorithm that summarizes the extent to which the center (or scholar) achieved the program's short-term and long-term goals during the program's first five years. Because it is expected that it will take more than five years for the centers and scholars to fully achieve the program's long-term goals, it is recommended that the algorithm for generating a center's (or scholar's) overall success score place more weight on the achievement of the short-term goals than the long-term goals.

Data analysis. Given the relatively small number of WRHR centers in the FY 1998-1999 cohort (n=20), a multiple case study design with cross-site analysis is recommended. A variety of analytical techniques will be used (e.g., descriptive statistics, *t*-tests, correlation analysis, qualitative analysis) to answer the study questions. For most of the questions involving changes through time, performance in FY 2004-2005 will be compared with baseline performance in FY 1996-1997 (prior to the establishment of the WRHR Program).

To answer **study questions 1 - 4**, data will be analyzed and summarized (using tables and graphs wherever possible) to present a comprehensive description of the requirements of the WRHR Program and the amount of NIH resources and activities supporting the program, the baseline characteristics of the WRHR centers and scholars, and the extent to which different program activities were implemented by the centers during their first five years. Recommendations for improving the WRHR Program will also be presented (a component of study question 1). **Study questions 5 - 8** will then be answered to assess the extent to which the program's goals were achieved by the participating centers and scholars. Based on these results, an *overall success score* will be generated for each WRHR center (and scholar) using an agreed-upon algorithm that summarizes the extent to which the center (and scholar) achieved the short-term and long-term program goals. The relationship between each predictor variable and overall success (**study questions 9 - 11**) will then be computed using Pearson product moment correlation coefficients. The results of the correlation analysis will indicate which of the center characteristics, scholar characteristics, and center activities were most highly related to success in achieving the program's goals. In addition, on-site interviews will be conducted with participants serving in different roles at 4 WRHR centers that were very successful in achieving the program goals for centers and 2 WRHR centers that were not very successful in achieving these goals. These case studies will supplement the data collected from other sources by describing in much more detail how specific program activities were implemented and why some practices worked better than others. This type of qualitative data is needed to fully answer study questions 9 - 11 and provide additional insight into "best practices".

Study questions 12 - 14 involve comparison groups. The feasibility study found that 16 non-WRHR ObGyn departments were similar to the WRHR departments at baseline. Specifically, they had each applied for a WRHR K12 grant in FY 1998-1999 (indicating a strong interest in supporting the research career development of obstetricians-gynecologists even though their WRHR grant proposals were not successful) and their average NIH rank with respect to the total extramural dollars the departments received from NIH in FY 1997 was very similar to the average rank for the WRHR ObGyn departments (WRHR average rank = 19.1 vs. non-WRHR average rank = 20.6). Study question 12 will be answered by comparing the group of 84 WRHR

scholars with a group of at least 30 ObGyn physicians from these 16 non-WRHR departments who were similar to the WRHR scholars in FY 1998-1999 with respect to their subspecialty training, years since completing residency, academic rank, and interest in pursuing research careers. The AAMC Faculty Roster database, IMPAC II database, and PubMed will be the primary data sources for identifying a comparison group for the ObGyn scholars. A similar approach will be used to answer Study questions 13 and 14, comparing the group of 20 WRHR ObGyn departments (and institutions) with the group of 16 similar ObGyn departments (and institutions), specifically . In answering study question 13, simple *t*-tests will be used to determine whether the WRHR scholars were significantly more (or less) successful than the non-WRHR ObGyn physicians. Similar analyses will be conducted for study questions 14 and 15 to determine whether the WRHR ObGyn departments (and their institutions) were significantly more (or less) successful than the non-WRHR ObGyn departments (and their institutions) .

After the study questions have been answered, post hoc cluster analysis may be conducted to examine whether there are any natural groupings of centers and/or scholars based on their baseline characteristics. If so, additional analyses may be done to assess the extent to which "type of WRHR center" or "type of WRHR scholar" (each a nominal variable) is related to subsequent success in achieving the program's goals.

Use of Results

At regular intervals during the course of the full-scale evaluation, an external technical advisory committee will be convened to provide advice to NICHD and the evaluation team. The advisory committee will be responsible for reviewing all of the findings of the evaluation and suggesting ways the WRHR Program could be enhanced in the future. For example, the suggestions could relate to the content of future solicitations for WRHR centers, criteria that study sections could consider when reviewing WRHR grant proposals, more detailed instructions for WRHR PIs to use in completing their Type 5 noncompetitive renewal applications (annual progress reports), and specific information that could be collected on a regular basis to track the future progress of the WRHR centers and scholars.

The findings of the full-scale evaluation of the WRHR Program will be used by NICHD in developing strategies to enhance the program's effectiveness, track the future progress of the WRHR centers and scholars, and improve program management. In addition, WRHR center administrators will be able to use the results to compare their center's performance with the average performance of the centers as a group, learn about "best practices" implemented by the most successful centers, and improve the management of their centers. It is also anticipated that the methodology and results of the WRHR outcome evaluation will be useful to other NIH Institutes and Centers as well as other organizations interested in promoting women's reproductive health research and/or evaluating the success of other research career development programs.

SECTION 5:
CONCLUSION

In summary, the feasibility study for the evaluation of the WRHR Program was implemented successfully and achieved its major objectives:

- To examine the operations of the 20 WRHR centers that were initially funded in FY 1998-1999 and the 84 scholars who participated in the program during each center's first five years.
- To identify a core set of measures and data sources to allow ongoing program monitoring and evaluation of the WRHR Program.
- To recommend an optimal design for a future full-scale outcome evaluation of the WRHR Program, including potential comparison groups, measures, data collection procedures, and a data analysis plan.

In addition to achieving these goals and helping NICHD administrators increase their understanding of the first 20 WRHR centers and their scholars, the findings of the feasibility study have already proven to be useful to the Institute in identifying critical variables to include in evaluations of other K12 programs. It is anticipated that the methodology and results of the feasibility study will also be of interest to the greater NIH community, particularly administrators and evaluators involved with research career development programs.

EXHIBITS

Exhibit 1

WRHR CENTERS FUNDED IN FY 1998-1999

Lead Institution(s)	Initial Year of WRHR Funding	NIH Grant Number	Initial Principal Investigator	Initial Program Director
Brigham and Women's Hospital / Harvard Medical School	FY 1999	HD001255	Robert Barbieri, MD	Cynthia Morton, PhD
Case Western Reserve University	FY 1999	HD001273	Patrick Catalano, MD	Neal Rote, PhD
Columbia University Health Sciences Center	FY 1999	HD001275	Rogerio Lobo, MD	Michael Ferin, MD
Magee-Women's Hospital / University of Pittsburgh	FY 1998	HD001261	Richard Sweet, MD	James Roberts, MD
Oregon Health and Science University	FY 1998	HD001243	Paul Kirk, MD	John Bissonnette, MD
Stanford University	FY 1998	HD001249	Mary Polan, MD	Linda Giudice, MD, PhD
University of Alabama at Birmingham	FY 1999	HD001258	Robert Goldenberg, MD	
University of California Los Angeles	FY 1998	HD001281	Alan DeCherney, MD	Gautam Chaudhuri, MD, PhD
University of California San Diego	FY 1999	HD001259	Thomas Moore, MD	Gregory Erickson, PhD
University of California San Francisco	FY 1998	HD001262	A. Eugene Washington, MD	Robert Jaffe, MD
University of Cincinnati	FY 1998	HD001256	Robert Rebar, MD	Leslie Myatt, PhD
University of Colorado Health Sciences Center	FY 1999	HD001271	Ronald Gibbs, MD	Kimberly Leslie, MD
University of Pennsylvania	FY 1998	HD001265	Michael Mennuti, MD	Jerome Strauss, MD, PhD
University of Rochester	FY 1999	HD001332	David Guzick, MD	Richard Miller, PhD
University of Texas Health Sciences Center at Houston	FY 1998	HD001277	Larry Gilstrap, MD	Firyal Khan, PhD
University of Texas Medical Branch at Galveston	FY 1998	HD001269	Garland Anderson, MD	Melvyn Soloff, PhD
University of Utah	FY 1999	HD001241	Eli Adashi, MD	D. Ware Branch, MD
University of Washington	FY 1998	HD001264	Steven Gabbe, MD	Michael Soules, MD
Wake Forest University Health Sciences Center	FY 1998	HD001267	Eberhard Mueller-Heubach, MD	James Rose, PhD
Wayne State University	FY 1998	HD001254	Mark Evans, MD	Michael Diamond, MD

Exhibit 2

FEASIBILITY STUDY FOR THE WRHR EVALUATION

Technical Evaluation Workgroup Roster

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Exhibit 3

FEASIBILITY STUDY FOR THE WRHR EVALUATION

Charge to the Technical Evaluation Workgroup

A. Assess the proposed design for the WRHR evaluation:

1. Logic model
2. Study questions
3. Operational definitions of key variables
4. Data collection strategies
5. Overall design

B. Recommend improvements in the study design:

1. Are the *long-term program goals* listed in the logic model reasonably achievable by the end of five years of WRHR support? Are the *short-term program goals* achievable within five years or less? Should any goals be omitted or should any other goals be added? Are the *predictor variables* likely to be related to success? Should any be omitted or should any other predictors be added?

2. Are the proposed study questions appropriate? How could they be improved? Should any be omitted or should any other questions be added?

3. Are the proposed operational definitions of the predictor and outcome variables clear? How could the definitions be improved?

4. Are the data collection strategies appropriate? How could they be improved? Should telephone interviews and/or site visits be used to collect qualitative data?

5. Is the overall design for the WRHR evaluation described clearly in the draft final report of the feasibility study? How could the report be improved?

Exhibit 4

FEASIBILITY STUDY FOR THE WRHR EVALUATION

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Exhibit 5

KEY STAKEHOLDER INTERVIEWS

Discussion Guide for Interviewing WRHR Scholars

INTRODUCTION

Hello. Is this Dr. _____? My name is _____. I am an independent contractor working with NICHD to design an evaluation of the WRHR Program.

I truly appreciate your willingness to answer a few questions and to share your perspective on the program. Before we begin, I want to assure you that your responses will be kept strictly confidential and will not be shared with the NICHD staff or anyone else. We expect our discussion will take about take about 45 minutes, but we scheduled an hour in case it takes longer. Do you have any questions before we begin?

DISCUSSION QUESTIONS

First, could you tell me how you came to be involved with the WRHR Program.

Looking back on your initial expectations, did things turn out the way you hoped they would?

Have there been any surprises?

Do you think certain types of *individuals* may be more likely than others to succeed as WRHR scholars?

If yes: What individual characteristics are likely to be related to success?
[Probe for specific scholar characteristics listed in the logic model.]

Let's turn now to some *institutional* factors. Creating a career development program for physicians interested in becoming research scientists is not an easy task.

Overall, what do you think is the biggest challenge for an ObGyn department and the institution as a whole in training physician scientists?

Do you think this type of program has a better chance of succeeding in certain types of institutions?

If yes: What institutional characteristics are likely to be related to success?
[Probe for specific WRHR center characteristics listed in the logic model.]

It is often hard to achieve a smooth-running and efficient program that meets the day-to-day needs of all the participants. In your opinion, what are the most important things a WRHR center should do to be successful?

With respect to *recruiting new scholars*, what strategies do you think are most effective?

Do you have any ideas for recruiting underrepresented minorities?

How important is it to recruit individuals from outside the institution?

After a scholar is on board, what should be done to best meet his or her needs?

What types of research support should be provided to help scholars succeed?

How can scholars best learn grantsmanship and other skills needed to have a successful career as a research scientist?

How important is one-on-one *mentoring*?

In your opinion, what makes a good mentor? Do you think different types of scholars do better with different types of mentors?

At your WRHR center, how are the mentors selected? Can the scholar change his or her mentor? How?

Do you think there should be certain requirements of all mentors? [If yes: Please explain.]

As you probably know, each WRHR center has an *advisory committee*. Have you interacted with a WRHR advisory committee? [If yes: Please explain how.]

In your view, what are the most important roles that the advisory committee can play?

In summary, of all the things we have been talking about, what one or two things would you say are *extremely important* in making this type of program successful?

CONCLUSION

We are nearing the time to conclude the interview. I want to thank you very much for the helpful information (and insights) you have given. I have enjoyed talking with you.

Exhibit 6

KEY STAKEHOLDER INTERVIEWS

Discussion Guide for Interviewing WRHR PIs, PDs, and Mentors

INTRODUCTION

Hello. Is this Dr. _____? My name is _____. I am an independent contractor working with NICHD to design an evaluation of the WRHR Program.

I truly appreciate your willingness to answer a few questions and to share your perspective on the program. Before we begin, I want to assure you that your individual responses will be kept strictly confidential and will not be shared with the NICHD staff or anyone else. I expect our discussion will take about 45 minutes, but we scheduled an hour in case it takes longer. Do you have any questions before we begin?

DISCUSSION QUESTIONS

First, please tell me how you came to be involved with the WRHR Program.

When and how did you first become involved?

What were your expectations about the program?

Looking back on your initial expectations, did things turn out the way you hoped they would?

Have there been any surprises?

As you know, the program was designed to help ObGyn physicians who have completed their clinical training and hope to become independent research scientists addressing women's health issues.

Do you think certain types of *individuals* may be more likely than others to benefit from this type of career development program?

If yes: In your opinion, what *personal characteristics* or experiences are likely to be related to a scholar's success? [Probe for specific scholar characteristics listed in the logic model.]

Let's turn now to some *institutional* factors. Creating a career development program for physicians interested in becoming research scientists is not an easy task.

Overall, what do you think is the biggest challenge for an *ObGyn department* in training physician scientists?

What do you think is the biggest challenge for the *medical school* and the academic institution as a whole?

Do you think this type of program has a better chance of succeeding in certain types of institutions?

If yes: What institutional characteristics are likely to be related to success?
[Probe for specific WRHR center characteristics listed in the logic model.]

It is often hard to achieve a smooth-running and efficient program that meets the day-to-day needs of all the participants. In your opinion, what are the most important things a WRHR center should do to be successful?

With respect to *recruiting new scholars*, what strategies do you think are most effective?

Do you have any ideas for recruiting underrepresented minorities?

How important is it to recruit individuals from outside the institution?

What should we look for in assessing a center's recruitment efforts?

After a scholar is on board, what should be done to best meet his or her needs?

What types of research support should be provided to help scholars succeed?

How can scholars best learn grantsmanship?

How important is one-on-one *mentoring*?

In your opinion, what makes a good mentor?

Should there be certain requirements of all mentors? [If yes: Please explain.]

How does your WRHR center define *completing the program*?

As you know, each WRHR center has an internal *advisory committee*.

In your view, what are the most important roles that the advisory committee can play?

In addition to its role in assessing individual scholars, do you think the advisory committee should assess the center as a whole and offer its recommendations? [If yes: Please explain.]

If you were in a position to change the way NICHD has structured or implemented the WRHR Program, what would you do differently?

In summary, of all the things we have been talking about, what one or two things would you say are *extremely important* in making this type of program successful?

CONCLUSION

We are nearing the time to conclude the interview. I want to thank you very much for the helpful information (and insights) you have given. I have enjoyed talking with you.

Exhibit 7

KEY STAKEHOLDER INTERVIEWS

Discussion Guide for Interviewing Non-WRHR Stakeholders

INTRODUCTION

Hello. Is this Dr. _____? My name is _____. I am an independent contractor working with NICHD to design an evaluation of the WRHR Program. You probably know this is an NICHD program to develop Women's Reproductive Health Research Career Development Centers at medical schools around the country.

I truly appreciate your willingness to answer a few questions and to share your perspective on the program. Before we begin, I want to assure you that your individual responses will be kept strictly confidential and will not be shared with the NICHD staff or anyone else. We expect our discussion will take about 30-45 minutes, but we scheduled an hour in case it takes longer. Do you have any questions before we begin?

DISCUSSION QUESTIONS

First, could you tell me how familiar you are with the WRHR Program.

> Did you have any initial expectations about the program when it was just getting off the ground 5-6 years ago?

As you know, the program was designed to help ObGyn physicians who have completed their clinical training and hope to become independent research scientists addressing women's health issues.

> Do you think certain types of *individuals* may be more likely than others to benefit from this type of career development program?
>
> If yes: In your opinion, what *personal characteristics* or experiences are likely to be related to a scholar's success? [Probe for specific scholar characteristics listed in the logic model.]

Let's turn now to some *institutional* factors. Creating a career development program for physicians interested in becoming research scientists is not an easy task.

> Overall, what do you think is the biggest challenge for an *ObGyn department* in training physician scientists?
>
> What do you think is the biggest challenge for the *medical school* and the academic institution as a whole?

Do you think this type of program has a better chance of succeeding in certain types of institutions?

If yes: In your opinion, what *institutional characteristics* are likely to be related to success? [Probe for specific WRHR center characteristics listed in the logic model.]

After a scholar has been recruited and is on board, the centers are expected to provide formal training in research as well as an opportunity to work with a senior investigator in a mentored environment.

In your opinion, are there *other* things a center could do to help meet the scholar's needs? For example what types of *research support* should be provided to help scholars succeed?

How can scholars best learn *grantsmanship*?

How important is one-on-one *mentoring*?

In your opinion, what makes a good mentor?

Should there be certain requirements of all mentors? [If yes: Please explain.]

As you may know, each WRHR center has an internal *advisory committee*.

In your view, what are the most important roles that the advisory committee can play?

In addition to its role in assessing individual scholars, do you think the advisory committee should assess the center as a whole and offer suggestions for improving the center? [If yes: Please explain.]

In summary, of all the things we have been talking about, what one or two things would you say are *extremely important* in making this type of program successful?

CONCLUSION

We are nearing the time to conclude the interview. I want to thank you very much for the helpful information (and insights) you have given. I have enjoyed talking with you.

Exhibit 8

RECOMMENDED WRHR DATA ITEMS
FOR USE IN TRACKING CENTER AND SCHOLAR PERFORMANCE

Data Item	Definition[1]	Currently Collected for WRHR Database[2]	Needed for Full-Scale Evaluation
WRHR CENTER INFORMATION	**RECOMMENDED DATA ITEMS TO BE COLLECTED FOR EACH WRHR CENTER**		
WRHR Institution	Full name of the WRHR institution, as shown on the NIH Awards website. The current WRHR database does not require using NIH's official name for the institution.[3]	Y	Y
WRHR Principal Investigator(s)	Name and department of each WRHR PI and the date (month/year) that he/she became the PI. The current WRHR database collects only the current PI, department, and date he/she became the PI.[3]	Y	Y
WRHR Program Director(s)	Name and department of each WRHR PD and the date (month/year) that he/she became the PD. The current WRHR database collects only the current PD, department, and date he/she became the PI.[3]	Y	Y
Internal WRHR Advisory Committee	Names and departments of all individuals who have served on the internal WRHR advisory committee.	N	Y
Applicant Scholars	Total number of candidates who applied to be WRHR scholars since the center was first funded.	Y	Y
Accepted Scholars	Total number of candidates who were accepted as WRHR scholars (and approved by NICHD) since the center was first funded.	Y	Y
Former and Current Scholars	Table showing the number of scholars who have completed the program to date, the number who left the program prematurely, and the number of current scholars.	Y	Y
Sex and Race/Ethnicity of Scholars	Table (with 2 columns and 7 rows) showing the sex and race/ethnicity (if available) of your WRHR scholars to date, with sex categorized as Male or Female, ethnicity categorized as Hispanic or Non-Hispanic, and racial background categorized as: American Indian/Alaska Native, Asian, Black/African American, Native Hawaiian/Other Pacific Islander, White/Caucasian, or Other.	Y	Y
Major Accomplishments	Brief description of major accomplishments of each WRHR scholar and the center as a whole.	Y	Y
Institution's Overall Research Experience	See Operational Definitions.[4]	N	Y
Institution's Previous Experience in Women's Reproductive Health Research	See Operational Definitions.	N	Y

Exhibit 8

RECOMMENDED WRHR DATA ITEMS FOR USE IN TRACKING CENTER AND SCHOLAR PERFORMANCE

Data Item	Definition[1]	Currently Collected for WRHR Database[2]	Needed for Full-Scale Evaluation
Institution's Experience with Other Research Training and Career Development Programs	See Operational Definitions.	N	Y
Previous Research Experience of PI and PD	See Operational Definitions.	N	Y
Participating Departments	Names of the academic and clinical departments represented by the PI, PD, members of the internal WRHR advisory committee, and the proposed WRHR mentors.	N	Y
Research Areas to be Pursued	See Operational Definitions.	N	Y
Identifying and Recruiting Promising Scholars	See Operational Definitions. The full-scale evaluation will collect more information than is currently collected for the WRHR database.[3]	Y	Y
Offering Formal Training in Research and Grantsmanship	See Operational Definitions.	N	Y
Providing Research Support to Scholars	See Operational Definitions. The full-scale evaluation will collect more information than is currently collected for the WRHR database.[3]	Y	Y
Ensuring that Scholars' Research Time is Protected	See Operational Definitions.	N	Y
Providing Scholars with Extensive One-on-One Mentoring	See Operational Definitions.	N	Y
Working with the Internal Advisory Committee to Assess the Center and Scholars	See Operational Definitions. The full-scale evaluation will collect more information than is currently collected for the WRHR database.[3]	Y	Y
Increased Institutional Commitment to Women's Reproductive Health Research	See Operational Definitions.	N	Y

Exhibit 8

RECOMMENDED WRHR DATA ITEMS
FOR USE IN TRACKING CENTER AND SCHOLAR PERFORMANCE

Data Item	Definition[1]	Currently Collected for WRHR Database[2]	Needed for Full-Scale Evaluation
WRHR SCHOLAR INFORMATION	**RECOMMENDED DATA ITEMS TO BE COLLECTED FOR EACH CURRENT AND FORMER SCHOLAR**		
Scholar's Name	Scholar's full name (including middle name or initial).	Y	Y
WRHR Appointment Start Date	Start date (month/day/year) of the scholar's WRHR appointment.	Y	Y
WRHR Appointment End Date	End date (month/day/year) of the scholar's WRHR appointment.	Y	Y
Advanced Degrees Prior to WRHR	Number and types of advanced degrees (e.g., MD, PhD, MPH, MS) earned before joining WRHR.	Y	N
Degree Earned During WRHR (if any)	Type of advanced degree (if any) earned during WRHR, the year the degree was granted (to verify it was earned during WRHR), and the area of concentration.	Y	Y
Academic Position/Title Prior to WRHR Appointment	Scholar's academic position the year before joining WRHR (e.g., fellow, instructor, asst prof, assoc prof).	Y	Y
Academic Position/Title at Start of WRHR Appointment	Scholar's academic position after joining WRHR.	Y	N
Research Area Being Pursued	Primary research area the scholar is pursuing duirng WRHR (Gen ObGyn, MFM, REI, Gyn Onc, Urogyn, Adol Gyn, Other).	Y	Y
Type of Research Being Pursued	Primary type of research the scholar is pursuing during WRHR (basic, clinical, or translational).	Y	Y
ObGyn Board Certifications	Number and types of ObGyn board certifications the scholar received prior to WRHR, including year of certification in each case.	Y	Y
Subspecialty Training	Number and types of clinical fellowship training programs (if any) the scholar participated in before joining WRHR. The current WRHR database collects only information on subspecialty certifications completed prior to WRHR. [3]	Y	Y
Years Since Completing Residency	Number of years from the time the scholar completed medical residency training until he/she joined the WRHR program.	Y	Y

Exhibit 8

RECOMMENDED WRHR DATA ITEMS FOR USE IN TRACKING CENTER AND SCHOLAR PERFORMANCE

Data Item	Definition[1]	Currently Collected for WRHR Database[2]	Needed for Full-Scale Evaluation
Scholar's Sex	See Operational Definitions.	N	Y
Previous Scientific Publications	See Operational Definitions. In most cases, the current WRHR database collects only the scholar's publications during WRHR. [3]	Y	Y
Previous NIH Grant Applications	See Operational Definitions.	N	Y
Previous NIH Grant Awards	See Operational Definitions.	Y	Y
Previous Other Research-Related Experience	See Operational Definitions.	Y	Y
WRHR Research Project(s)	Research project(s), including a brief description of the hypotheses, specific aims, and significance of the research to ObGyn. Most of this information will not be needed for the full-scale evaluation. [3]	Y	Y
Scientific Publications Since Joining WRHR	See Operational Definitions. In some cases, the current WRHR database includes information on papers involving clinical cases and papers published in non-refereed journals, which will not be included in the full-scale evaluation. In other cases, the database does not include all of the scholar's peer-reviewed publications listed in PubMed. [3]	Y	Y
Oral and Poster Presentations Since Joining WRHR	See Operational Definitions. The current WRHR database includes separate counts of the scholar's abstracts and invited presentations (including many that do not appear to have been "invited"). For the full-scale evaluation, it is recommended that one variable be used to summarize all of the scholar's oral and poster presentations since joining WRHR.	Y	Y
NIH Grant Applications Since Joining WRHR	See Operational Definitions.	N	Y
NIH Grant Awards Since Joining WRHR	See Operational Definitions. The current WRHR database collects information on any type of grant support the scholar received prior to, during, and after WRHR, including other investigators' grants. [3]	Y	Y
Other Grant Awards Since Joining WRHR	See Operational Definitions. The current WRHR database collects information on any type of grant support the scholar received prior to, during, and after WRHR, including other investigators' grants. [3]	Y	Y
Awards, Promotions, and Other Recognition Since Joining WRHR	The current WRHR database collects information on awards, honors, promotions, and other recognition the scholar received after joining WRHR (excluding grant awards), including teaching awards, and recognitions for clinical accomplishments.	Y	N

Exhibit 8

RECOMMENDED WRHR DATA ITEMS
FOR USE IN TRACKING CENTER AND SCHOLAR PERFORMANCE

Data Item	Definition[1]	Currently Collected for WRHR Database[2]	Needed for Full-Scale Evaluation
NIH Loan Repayment Program Since Joining WRHR	Whether or not the scholar participated in the NIH Loan Repayment Program during WRHR .	Y	N
Current Academic Position/Title	Scholar's current academic position (which usually includes the department).	Y	Y
Current Institution	Scholar's current institution.	Y	Y
Current Work Address	Scholar's current mailing address.	Y	N
Current Phone Number	Scholar's current telephone number.	Y	N
Current Fax Number	Scholar's current fax number.	Y	N
Current E-Mail Address	Scholar's current e-mail address.	Y	N
WRHR MENTOR INFORMATION	**RECOMMENDED DATA ITEMS TO BE COLLECTED FOR EACH MENTOR**		
Mentor's Name	Mentor's full name (including middle name or initial).	Y	Y
Scholar Name(s)	Names of all WRHR scholars the individual has mentored.	Y	Y
Mentor's Degree(s)	Mentor's advanced degrees.	Y	Y
Mentor's Academic Position/Title	Mentor's current academic position (which usually includes the department).	Y	Y
Mentor's Institution	Mentor's current institution.	Y	Y
Mentor's Work Address	Mentor's current mailing address.	Y	N

Exhibit 8

RECOMMENDED WRHR DATA ITEMS FOR USE IN TRACKING CENTER AND SCHOLAR PERFORMANCE

Data Item	Definition[1]	Currently Collected for WRHR Database[2]	Needed for Full-Scale Evaluation
Mentor's Phone Number	Mentor's current telephone number.	Y	N
Mentor's Fax Number	Mentor's current fax number.	Y	N
Mentor's E-Mail Address	Mentor's current e-mail address.	Y	N
Mentor's Previous Research Experience	See Operational Definitions. The current WRHR database collects information on the mentor's research area and specialty/subspecialty area but does not collect information on the mentor's NIH grant awards or study section experience. [3]	Y	Y
Mentor's Previous Mentoring Experience	See Operational Definitions.	N	Y

[1] This column lists the definition of the data item that is recommended for the full-scale evaluation of the WRHR Program and/or the definition used in the current WRHR database (if applicable).

[2] Some information is not collected specifically for the WRHR database because it is available from other sources.

[3] There are differences in how the data item is defined in the full-scale evaluation and the current WRHR database (which are explained in the Definition column).

[4] "See Operational Definitions" refers to Exhibit 12, Proposed Operational Definitions and Data Sources for the Variables in the Logic Model.

Exhibit 9

PILOT TEST RESULTS FOR WRHR CENTERS FUNDED IN FY 1998-1999

WRHR Center[1]	Location[1]	Initial Year of WRHR Funding	Total NIH Dollars Awarded to Academic Instit in FY 1997	Total NIH Dollars Awarded to Med School in FY 1997	NIH Ranking of Academic Instit in FY 1997[1,2]	NIH Ranking of Med School in FY 1997[1,2]	Current PI[1]	Initial PI[1]	Initial PI's Prev Rsch Experience[3]	Current PD[1]	Initial PD[1]	Initial PD's Prev Rsch Experience[3]
Center A		FY 1998	$152 M	$108 M					U19, M01 subproject, N01 subproject			P01, S15
Center B		FY 1998	$158 M	$97 M					--			2 R01s, S06
Center C		FY 1998	$43 M	$42 M					--			2 R01s
Center D		FY 1999	$71 M	$50 M					2 R01s			R01, R24, M01 subproject
Center E		FY 1998	$52 M	$52 M					--			R01, R37
Center F		FY 1998	$49 M	$37 M					N01 subproject			R01, M01 subproject

NOTE: Several data sources were used to obtain scholar information that was current as of April 2005 (IMPAC II, NIH award database, WRHR database).

[1] The names and other identifying features of the 6 WRHR centers that served as pilot sites (shaded areas) are not shown in this report to protect confidentiality.

[2] NIH ranking in FY 1997 is based on the total NIH dollars awarded to the academic institution or medical school (low number indicates high rank).

[3] NIH grant awards during FY 1993-1997.

Exhibit 9

PILOT TEST RESULTS FOR WRHR CENTERS FUNDED IN FY 1998-1999

WRHR Center[1]	# Scholar Positions Requested	# Scholar Positions Approved by NICHD	Total # Scholar Applicants	Total # Scholars Accepted	% Female Scholars	% Underrep Minority Scholars	Underrep Minority Groups	# Months to Fill First Scholar Position	# Months to Fill First 3 Scholar Positions	# Scholars Who Completed Program	# Scholars Who Left Program Prematurely	# Scholars Who Have Received NIH Grant Awards
Center A	3	3	13	5	60%	0%		2.0	11.0	3	1	2
Center B	4	3	5	4	0%	0%		12.0	16.0	3	0	1
Center C	4	3	5	5	40%	20%	1 Hisp	3.0	3.0	1	3	1
Center D	3	3	8	3	67%	0%		9.0	46.0	1	0	0
Center E	4	3	6	3	67%	0%		1.0	9.0	1	1	1
Center F	4	3	6	6	33%	0%		2.0	11.0	1	3	1

Exhibit 10

PILOT TEST RESULTS FOR WRHR SCHOLARS
TRAINED AT WRHR CENTERS FUNDED IN FY 1998-1999

WRHR Center	Scholar's Name	Sex	WRHR Start Date	WRHR End Date	Reason for Leaving WRHR[2]	Prev Degrees	Degrees Earned During WRHR	Academic Rank Prior to WRHR Appointment	Current Position	Current Institution (If Different)	ObGyn Board Cert	Subspec Trng	Yrs After Resid
Center A	Scholar 1	F	12/1/98	11/30/03	C	MD		Fellow	Asst Prof		Y	N	4
Center A	Scholar 2	F	9/18/00	7/1/04	C	MD		Asst Prof	Asst Prof		Y	N	7
Center A	Scholar 3	M	7/1/02	11/30/04	C	MD		Fellow	Asst Prof		N	N	3
Center A	Scholar 4	M	7/1/99	9/15/00	RT	MD		Asst Prof	Assoc Prof; Vice Chair Admin	Y	Y	Y	9
Center A	Scholar 5	F	7/1/99			MD		Fellow	Asst Prof	Y	Y	N	5
Center B	Scholar 1	M	9/30/99	6/30/04	C	MD PhD		Asst Prof	Prof		Y	Y	0
Center B	Scholar 2	M	2/1/00	1/1/05	C	MD	PhD	Instructor	Instructor		N	N	4
Center B	Scholar 3	M	9/30/99	6/30/04	C	MD MS MPH		Asst Prof	Asst Prof		Y	N	1
Center B	Scholar 4	M	7/1/00			MD		Fellow	Asst Prof		N	N	3
Center C	Scholar 1	F	1/1/99	1/1/03	C	MD		Asst Prof	Asst Prof		Y	Y	8
Center C	Scholar 2	M	6/3/02			MD PhD		Asst Prof	Asst Prof		Y	N	4
Center C	Scholar 3	F	1/1/99	11/30/03	RH	DO PhD	PhD	Asst Prof	Asst Prof		Y	Y	17
Center C	Scholar 4	M	1/5/99	5/30/00	RT	MD PhD			Assoc Prof	Y			
Center C	Scholar 5	M	7/1/00	3/30/01	RP	MD		Asst Prof	Asst Prof				
Center D	Scholar 1	M	7/1/00	10/1/04	C	MD		Instructor	Asst Prof		Y	N	3
Center D	Scholar 2	F	8/1/00			MD		Fellow	Asst Prof		Y	N	3
Center D	Scholar 3	F	8/1/03			MD MPH		Fellow	Asst Prof		N	N	0

Exhibit 10

PILOT TEST RESULTS FOR WRHR SCHOLARS
TRAINED AT WRHR CENTERS FUNDED IN FY 1998-1999

WRHR Center	Scholar's Name	Sex	WRHR Start Date	WRHR End Date	Reason for Leaving WRHR[2]	Prev Degrees	Degrees Earned During WRHR	Academic Rank Prior to WRHR Appointment	Current Position	Current Institution (If Different)	ObGyn Board Cert	Subspec Trng	Yrs After Resid
Center E	Scholar 1	M	11/1/98	6/1/00	C	MD PhD		Assoc Prof	Assoc Prof, Dept Chr ObGyn		Y	Y	7
Center E	Scholar 2	F	11/1/98			MD MS	MS	Assoc Prof	Assoc Prof		Y	Y	14
Center E	Scholar 3	F	7/1/99	6/15/00	RF	MD		Asst Prof	Assoc Prof	Y	Y	N	8
Center F	Scholar 1	M	1/1/99	3/1/02	C	MD		Assoc Prof	Prof; Dir REI Div	Y	Y	Y	15
Center F	Scholar 2	F	11/1/99	3/1/01	RT	MD		Instructor	Asst Prof	Y	Y	Y	7
Center F	Scholar 3	F	6/1/99	6/1/01	RF	MD MS	MS	Asst Prof	Asst Prof		Y	Y	15
Center F	Scholar 4	F	12/1/00	10/1/01	RP	MD		Asst Prof	Center Dir	Y	Y	Y	7
Center F	Scholar 5	M	6/1/02			MD		Asst Prof	Asst Prof; Dir Informatics		Y	Y	5
Center F	Scholar 6	F	7/1/02			MD		Asst Prof	Asst Prof; Head MFM Section		Y	N	9

Exhibit 10

PILOT TEST RESULTS FOR WRHR SCHOLARS TRAINED AT WRHR CENTERS FUNDED IN FY 1998-1999

WRHR Center	Scholar's Name	Prev Sci Pubs[3]	Prev NIH Grant Applics	Prev NIH Grant Awards	Prev Non-NIH Grant Awards[4]	Other Prev Rsch Exper[5]	Rsch Area Being Pursued in WRHR	Type of Rsch Being Pursued in WRHR	Sci Pubs Since Joining WRHR[3]	NIH Grant Applics Since Joining WRHR	Scholar's NIH Grant Awards Since Joining WRHR	Co-Inv on NIH Grants Since Joining WRHR[6]	Non-NIH Grant Awards Since Joining WRHR[4]	Oral + Poster Pres Since Joining WRHR
Center A	Scholar 1	5	0	0	1	5	Urogyn	Translational	4	6	R01	2 U10s, M01	0	13
Center A	Scholar 2	12	0	0	3	1	REI	Basic	4	3	R01	0	2	0
Center A	Scholar 3	1	0	0	1	1	MFM	Translational	7	0	0	P50, R01	1	11
Center A	Scholar 4	13	0	0	2	11	MFM	Translational	18	1	0	R01	1	0
Center A	Scholar 5	4	0	0	0	0	Gyn Oncol	Interdisc/Other	6	0	0	0	2	1
Center B	Scholar 1	8	0	0	3	2	Gyn Oncol	Translational	9	2	R03	0	2	8
Center B	Scholar 2	0	0	0	0	0	REI	Basic	2	0	0	0	0	3
Center B	Scholar 3	0	0	0	0	1	Gen ObGyn	Interdisc/Other	10	3	0	U01	2	27
Center B	Scholar 4	0	0	0	0	0	MFM	Basic	2	4	0	0	0	4
Center C	Scholar 1	0	0	0	0	0	Gyn Oncol	Basic	2	0	0	0	1	20
Center C	Scholar 2	3	1	0	0	1	MFM	Basic	4	4	0	R01	0	28
Center C	Scholar 3	7	0	0	0	0	MFM	Basic	9	1	0	0	0	37
Center C	Scholar 4	0	0	0			Other		6	2	R21	0	0	
Center C	Scholar 5	0	0	0			Other		1	0	0	0	0	
Center D	Scholar 1	6	0	0	0	2	MFM	Translational	5	3	0	0	0	13
Center D	Scholar 2	0	0	0	0	2	Gyn Oncol	Translational	5	0	0	0	0	3
Center D	Scholar 3	1	0	0	0	7	Gen ObGyn	Clinical	1	2	0	0	0	0

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PILOT TEST RESULTS FOR WRHR SCHOLARS TRAINED AT WRHR CENTERS FUNDED IN FY 1998-1999

WRHR Center	Scholar's Name	Prev Sci Pubs[3]	Prev NIH Grant Applics	Prev NIH Grant Awards	Prev Non-NIH Grant Awards[4]	Other Prev Rsch Exper[5]	Rsch Area Being Pursued in WRHR	Type of Rsch Being Pursued in WRHR	Sci Pubs Since Joining WRHR[3]	NIH Grant Applics Since Joining WRHR	Scholar's NIH Grant Awards Since Joining WRHR	Co-Inv on NIH Grants Since Joining WRHR[6]	Non-NIH Grant Awards Since Joining WRHR[4]	Oral + Poster Pres Since Joining WRHR
Center E	Scholar 1	11	3	0	5	1	MFM	Basic	7	1	R01	0	3	14
Center E	Scholar 2	5	0	0	1	4	MFM	Clinical	3	2	0	U10	5	13
Center E	Scholar 3	2	0	0	1	10	Gen ObGyn	Clinical	8	0	0	P01	0	1
Center F	Scholar 1	14	3	0	0	2	REI	Interdisc/Other	12	5	R01	U10	0	35
Center F	Scholar 2	0	0	0	0	0	Urogyn	Interdisc/Other	4	0	0	0	0	11
Center F	Scholar 3	6	0	R03	0	1	MFM	Clinical	19	0	0	U10	0	11
Center F	Scholar 4	8	0	0	0	0	REI	Clinical	0	0	0	0	0	22
Center F	Scholar 5	26	0	0	2	2	MFM	Interdisc/Other	16	0	0	U10	0	35
Center F	Scholar 6	19	0	0	1	0	MFM	Interdisc/Other	6	0	0	0	1	10

NOTE: Several data sources were used to obtain scholar information that was current as of April 2005 (IMPAC II, PubMed, web searches, scholar CVs and biosketches, WRHR database).

[1] The names and other identifying features of the 6 WRHR centers that served as pilot sites and their scholars (shaded areas) are not shown in this report to protect confidentiality.

[2] Codes for scholars that are not currently active in WRHR: C = completed the program, RH = resigned for health reasons, RF = resigned for family reasons, RP = resigned because he/she wanted a non-research career as a physician, RT = resigned because he/she transferred to a non-WRHR institution, RO = resigned for other reasons.

[3] To ensure consistency, PubMed was the only data source used to determine the number of scientific publications.

[4] The number of Non-NIH Grant Awards was determined from the scholar's CV and biosketch. Only research grants awarded to the scholar were counted (i.e., where the scholar served as prinicipal investigator). Internal research grants ("seed funding") awarded to the scholar by the institution were not counted as non-NIH grant awards.

[5] The number of Other Previous Research Experiences was determined from the scholar's CV and biosketch. Examples include receiving a research fellowship or other research award (including internal research funding), serving as a co-investigator (not PI) on an NIH research grant, participating in other post-baccalaureate research projects.

[6] The number of NIH Grants on which the scholar served as a co-investigator was based on WRHR progress reports, the WRHR database, and other data submitted by WRHR PIs.

Exhibit 11

EVALUATION OF THE WRHR PROGRAM

Proposed Operational Definitions and Data Sources for the Variables in the Logic Model

NIH RESOURCES AND ACTIVITIES SUPPORTING THE WRHR PROGRAM	**Measures describing the NIH resources allocated to the WRHR Program (in terms of funding and staff support) and the requirements of the program during its first five years.**
Annual Funding for the Program	The amount of funding that NICHD and ORWH allocated to the WRHR Program each year (total direct and indirect costs for all WRHR centers) and the average annual funding received by a center. (Data source: NICHD budget reports)
Amount of NICHD Staff Involvement in Different Types of Program Activities	The amount of NICHD staff involvement in the WRHR Program, as measured by the percent of staff effort each year that was directed toward the following types of program activities: developing program announcements and requests for applications (RFAs); providing assistance to potential awardees; serving as a resource during the award process; providing grants management and budgetary oversight; reviewing proposed scholars and mentors and approving those that meet program requirements; assisting WRHR principal investigators (PIs) and program directors (PDs) throughout the grant period; arranging for group meetings of WRHR PIs and PDs; participating in group meetings; and reviewing annual progress reports. (Data sources: WRHR progress reports and official correspondence, telephone and on-site interviews with NICHD staff and WRHR participants)
Specific Program Requirements	The specific characteristics of the WRHR Program with respect to the following elements of K12 career development programs: fiscal year of initial grant awards; period of grant award in years; maximum total annual costs per grant; types of allowable costs; minimum and maximum number of scholars per year; types of research to be pursued; minimum amount of protected research time for each scholar; amount and type of institutional cost-sharing requirements; requirements for the PI, PD, mentors, and advisory committee members; scholar eligibility requirements; research training program requirements; requirements for research resources for scholars (e.g., core labs); program evaluation requirements; number and type of group meetings to be arranged by NIH. (Data sources: WRHR program announcements and RFAs, telephone interviews with NICHD staff)

CENTER CHARACTERISTICS AT BASELINE	**Measures describing characteristics of each center prior to the start of the WRHR Program that are expected to be predictive of the center's subsequent success in achieving the program's goals.**
Institution's Overall Research Experience	The extent to which the WRHR institution was successful in obtaining NIH research funding prior to WRHR, as measured by the institution's highest NIH rank during FY 1997 based on the total NIH support received. (Data source: NIH award database)
Institution's Previous Experience in Women's Reproductive Health Research	The extent to which the WRHR institution was successful in obtaining NIH research grants (R, P, and M awards), cooperative agreements (U awards), and contracts (N awards) involving women's reproductive health prior to WRHR, as measured by the average number of competitive awards of this type received per year during FY 1996-1997 with CRISP abstracts indicating that the research was relevant to women's reproductive health. (Data source: CRISP database)
Institution's Experience With Other Research Training and Career Development Programs	The extent to which the WRHR institution was successful in obtaining NIH research training and career development grants (T, F, and K awards), as measured by (1) the average number of competitive awards of this type received year during FY 1996-1997; and (2) the ratio of the institution's T, F, and K awards to the total number of NIH awards it received during FY 1996-1997. (Data source: IMPAC II database)
Previous Research Experience of PI and PD	The extent to which the WRHR PI and PD were successful in obtaining NIH research funding and were knowledgeable about NIH prior to WRHR, as measured by (1) the average number of NIH extramural awards (of any type) they each received per year during FY 1993-1997; and (2) the total number of NIH study section and special emphasis panel meetings in which they participated during FY 1993-1997. (Data source: IMPAC II database)
Number of Participating Departments	The number of different academic and clinical departments represented by the PI, PD, members of the internal WRHR advisory committee, and pool of proposed WRHR mentors at the time of the initial WRHR award. (Data source: WRHR grant applications)
Research Areas Proposed for WRHR	The proposed areas of women's reproductive health research for WRHR scholars, categorized as follows: (1) basic, clinical, and/or translational research; (2) general obstetrics/gynecology, maternal-fetal medicine, reproductive endocrinology and infertility, gynecologic oncology, urogynecology, adolescent gynecology, reproductive health of women with disabilities, and/or another related area. (Data source: WRHR grant applications)

SCHOLAR CHARACTERISTICS AT BASELINE	**Measures describing characteristics of each scholar at the time he/she joined the WRHR Program that are expected to be predictive of the scholar's subsequent success in achieving the program's goals.**
Number of Previous Scientific Publications	The number of papers published by the scholar in refereed scientific journals (as first author or co-author) prior to joining the WRHR program, excluding case reports, comments, reviews, and other types of articles that are not directly related to research studies. (Data source: PubMed)
Amount of Previous Research-Related Experience	The extent to which the scholar had experience working on research projects prior to joining the WRHR program, as measured by the number of NIH and non-NIH grants awarded to the scholar and the number of other NIH and non-NIH research grants on which the scholar had participated. (Data sources: IMPAC II database, WRHR database, WRHR progress reports and official correspondence)
Amount of Previous Experience Applying for Research Grants	The number of competitive NIH grant applications of any type submitted by the scholar prior to joining the WRHR program, including amended NIH applications. (Data source: IMPAC II database)
Research Area to be Pursued	The area of women's reproductive health research the scholar planned to pursue at the time he/she joined the WRHR program, categorized as follows: (1) basic, clinical, and/or translational research; (2) general obstetrics/gynecology, maternal-fetal medicine, reproductive endocrinology and infertility, gynecologic oncology, urogynecology, adolescent gynecology, reproductive health of women with disabilities, and/or another related area. (Data sources: WRHR database, WRHR progress reports and official correspondence)
Number of Advanced Degrees	The number of graduate degrees (master's and doctoral degrees) the scholar had earned prior to joining the WRHR program. (Data sources: IMPAC II database, WRHR database)
Number of Ob/Gyn Board Certifications	The number of board certifications the scholar held (counting both general Ob/Gyn certification and any Ob/Gyn subspecialty certifications) at the time he/she joined the WRHR program. (Data sources: WRHR database, WRHR progress reports and official correspondence)
Subspecialty Training	Whether or not the scholar participated in a clinical fellowship training program in maternal-fetal medicine, reproductive endocrinology and infertility, and/or gynecologic oncology prior to joining the WRHR program. (Data sources: WRHR database, WRHR progress reports and official correspondence)

Years Since Completing Residency	Number of years from the time the scholar completed a medical residency program until he/she joined the WRHR program. (Data sources: WRHR database, WRHR progress reports and official correspondence)
Academic Rank	The scholar's highest academic level (i.e., clinical instructor, assistant professor, associate professor) prior to joining the WRHR program. (Data sources: WRHR database, WRHR progress reports and official correspondence)
Sex and Race/Ethnicity	The scholar's sex (if available) categorized as male or female, and the scholar's self-identified race/ethnicity (if available) categorized as follows: American Indian/Alaskan Native, Asian, Black/African American, Hispanic/Latino, Pacific Islander, White/Caucasian, or another race/ethnicity. (Data sources: WRHR progress reports and official correspondence).
Mentor's Previous Research Experience	The extent to which the scholar's mentor(s) were successful in obtaining NIH research funding and were knowledgeable about NIH prior to WRHR, as measured by (1) the average number of NIH extramural awards (of any type) the mentor(s) received per year during FY 1993-1997; and (2) the total number of NIH study section and special emphasis panel meetings in which they participated during FY 1993-1997. (Data source: IMPAC II database)
Mentor's Previous Mentoring Experience	The extent to which the scholar's mentor(s) served in a mentoring role prior to WRHR, as measured by the number of undergraduate, graduate, and postdoctoral trainees who received research training from the mentor(s) during FY 1993-1997. (Data sources: IMPAC II database, WRHR progress reports and official correspondence)
PROGRAM ACTIVITIES	**Measures describing the extent to which each WRHR center implemented specific program activities recommended by NIH during its first five years that are expected to be predictive of the center's and scholars' subsequent success in achieving the program's goals.**
Identifying and Recruiting Promising Scholars, Especially Underrepresented Minorities	The amount of attention given by the PI, PD, and internal WRHR advisory committee to identifying scholar candidates and recruiting and selecting scholars having a strong interest in research relevant to women's reproductive health and a strong potential to become independent research scientists, as measured by the quality and innovativeness of the strategies used to recruit and select high-quality internal and external candidates, including women and underrepresented minorities. (Data sources: WRHR progress reports and official correspondence, telephone and on-site interviews with WRHR participants)

Offering Formal Training in Research and Grantsmanship	The extent of formal training opportunities offered to WRHR scholars, including didactic coursework in basic, clinical, and/or translational research as well as other training opportunities such as workshops on scientific approaches (e.g., new technologies, laboratory equipment, models, techniques), grantsmanship workshops, and seminars on specific scientific issues and responsible research conduct. The amount of flexibility offered to scholars in selecting courses that meet their individual needs, including the opportunity to earn an additional degree (e.g., M.S., Ph.D.). (Data sources: WRHR progress reports and official correspondence, telephone and on-site interviews with WRHR participants)
Providing Research Support to Scholars	The extent to which the WRHR scholars were provided with the research support facilities, equipment, and services needed to conduct high-quality research, such as laboratory personnel (e.g., postdocs, lab technicians, graduate students), core laboratories and other shared facilities, well-trained technicians, bioinformatics and data management support, library support, and graphics capability. (Data sources: WRHR progress reports, telephone and on-site interviews with WRHR participants)
Ensuring that Scholars' Research Time is Protected	The amount of attention given by the PI, PD, internal advisory committee, and mentors to ensuring that all WRHR scholars are able to spend a minimum of 75% effort on research and research-related activities, with non-research commitments (e.g., clinical and academic obligations) kept to a minimum. (Data sources: WRHR progress reports, telephone and on-site interviews with WRHR participants)
Providing Scholars with Extensive One-on-One Mentoring	The amount of attention given by the PI, PD, internal advisory committee, and especially the mentors to ensuring that high-quality one-on-one mentoring is provided to the WRHR scholars. Mentoring in research and research career development should include offering scholars clear and frequent feedback on their scientific progress as well as guidance and support in areas relevant to their research career interests (e.g., mastering laboratory techniques, writing abstracts and scientific papers, writing grant proposals, hiring lab personnel, purchasing research equipment, tracking grant expenses, identifying and working with collaborators and NIH personnel, developing career goals, and prioritizing tasks). The amount of flexibility offered to scholars in selecting and changing their mentor(s). (Data sources: WRHR progress reports, telephone and on-site interviews with WRHR participants)
Working with the Internal Advisory Committee	The extent to which center participants met with and sought advice from the internal WRHR advisory committee in selecting WRHR scholars, monitoring their research progress, and assessing the overall conduct of the center so that its resources were focused on strategies that were likely to achieve the program's goals and objectives. (Data sources: WRHR progress reports, telephone and on-site interviews with WRHR participants)

SHORT-TERM PROGRAM GOALS	**Measures of the extent to which each WRHR center achieved the most important short-term objectives of the WRHR Program. It is expected that most of the short-term goals will be achieved within 2 to 5 years.**
FOR CENTERS:	
Successfully Recruiting a Diverse Group of Scholars	The extent to which the WRHR center was successful in: (1) encouraging both internal and external candidates to apply for scholar positions; and (2) recruiting high-quality candidates, including women and underrepresented minorities, who have varied interests with respect to women's reproductive health research. (Data sources: WRHR database, WRHR progress reports and official correspondence)
Filling Scholar Positions in a Timely Way	The extent to which the WRHR center was successful in (1) filling its scholar positions within a year after they have been approved by NIH; and (2) minimizing the need to request a carryover of funds at year end due to one or more unfilled scholar positions. (Data sources: WRHR database, WRHR progress reports and official correspondence)
Having Few Scholars Leave the Program	The extent to which the WRHR center was successful in having a low percentage of scholars (ideally, no more than 25%) drop out of the program prematurely before they achieved the completion goals established by the center. (Data sources: WRHR database, WRHR progress reports and official correspondence, telephone interviews with WRHR principal investigators)
FOR SCHOLARS:	
Publishing Research in Scientific Journals	The extent to which the WRHR scholar was successful in having manuscripts published in refereed scientific journals, as measured by the number of papers in which the scholar was the primary author or a co-author that were published after the scholar joined the WRHR program, excluding case reports, comments, reviews, and other types of articles that are not directly related to research studies. (Data sources: PubMed)
Giving Oral and Poster Presentations at Scientific Meetings	The extent to which the WRHR scholar was successful in being invited to give talks and having posters and abstracts accepted for presentation at scientific conferences, as measured by the number of presentations given after he/she joined the WRHR program. (Data sources: WRHR database, WRHR progress reports)
Applying for NIH Research Grants	The extent to which the WRHR scholar was successful in preparing and submitting one or more major NIH grant applications, as measured by the number of initial and amended competitive applications submitted to NIH after the scholar joined the WRHR program (e.g., grant applications where the scholar served as principal investigator of an R01 or equivalent research project grant or served as a lead investigator of a subproject of a P01, P50, M01, U19, or equivalent program project or center grant). (Data source: IMPAC II database)

Competing Successfully for a Research Grant of Any Type	Whether or not the WRHR scholar was successful in securing any type of competitive research funding from NIH and/or other sources external to the WRHR institution (e.g., other government agencies, foundations, private industry) after he/she joined the WRHR program. (Data sources: IMPAC II database, WRHR database, WRHR progress reports, website analysis)
LONG-TERM PROGRAM GOALS	**Measures of the extent to which each WRHR center achieved the most important long-term objectives of the WRHR Program. It is expected that most of the long-term goals will be achieved within 5 to 10 years.**
FOR CENTERS:	
At least 50% of Scholars Becoming Independent Research Scientists in Women's Reproductive Health Research	The extent to which the WRHR center was successful in having a high percentage of its scholars (ideally, 50% or more) become independent research scientists, as measured by the percent of scholars who had received at least one of the following types of grants supporting research relevant to women's reproductive health: (1) a major NIH grant where the scholar served as the principal investigator (e.g., R01 or equivalent research project grant) or served as the lead investigator of a subproject (e.g., P01, P50, M01, U19, or equivalent program project or center grant); or (2) a major research grant from another funding source where the scholar served as the principal investigator. (Data sources: IMPAC II database, WRHR database, WRHR progress reports, website analysis)
Increased Institutional Commitment to Women's Reproductive Health Research	The extent to which the WRHR institution increased its support for and capacity to conduct women's reproductive health research, as measured by the creation of new research positions, expanded core laboratories and other research facilities, improved incentives for recruiting high-quality researchers, and faculty appointment/promotion policies that encourage research productivity. (Data sources: WRHR progress reports, telephone and on-site interviews with WRHR participants and senior administrators at the institution)
FOR SCHOLARS:	
Pursuing a Career Involving Women's Reproductive Health Research	The extent to which the WRHR scholar was pursuing a career involving women's reproductive health research, as measured by the degree to which the scholar's professional responsibilities were directly related to research relevant to women's reproductive health. (Data sources: WRHR database, WRHR progress reports, telephone interviews with WRHR participants, website analysis)

Becoming an Independent Research Scientist	The extent to which the WRHR scholar was successful in receiving at least one of the following types of grants supporting research relevant to women's reproductive health: (1) a major NIH grant where the scholar served as the principal investigator (e.g., R01 or equivalent research project grant) or served as the lead investigator of a subproject (e.g., P01, P50, M01, U19, or equivalent program project or center grant); or (2) a major research grant from another funding source (e.g., other government agency, foundation, private industry) where the scholar served as the principal investigator. (Data sources: IMPAC II database, WRHR database, WRHR progress reports, telephone interviews with WRHR participants, website analysis)
OVERARCHING PROGRAM GOALS	**Measures of the extent to which the WRHR Program as a whole achieved specific objectives that were not required of grantees but were considered by NIH to be important indirect goals of the program. It is expected that the overarching goals will be achieved within 15 to 20 years.**
More Research Grants Awarded to WRHR ObGyn Departments	The extent to which the WRHR ObGyn departments were successful in increasing the number of competitive NIH extramural awards they received (non-WRHR awards of any type) during the first 15-20 years of the WRHR Program. (Data source: IMPAC II database)
More ObGyn Physician Scientists in the U.S.	The extent to which the total number of ObGyn physicians in the U.S. who were actively engaged in biomedical research increased during the first 15-20 years of the WRHR Program. (Data sources: IMPAC II database, PubMed, AAMC Faculty Roster database, ABMS Directory)

Exhibit 12

PROPOSED LOGIC MODEL

FOR A FUTURE FULL-SCALE EVALUATION OF THE WRHR PROGRAM

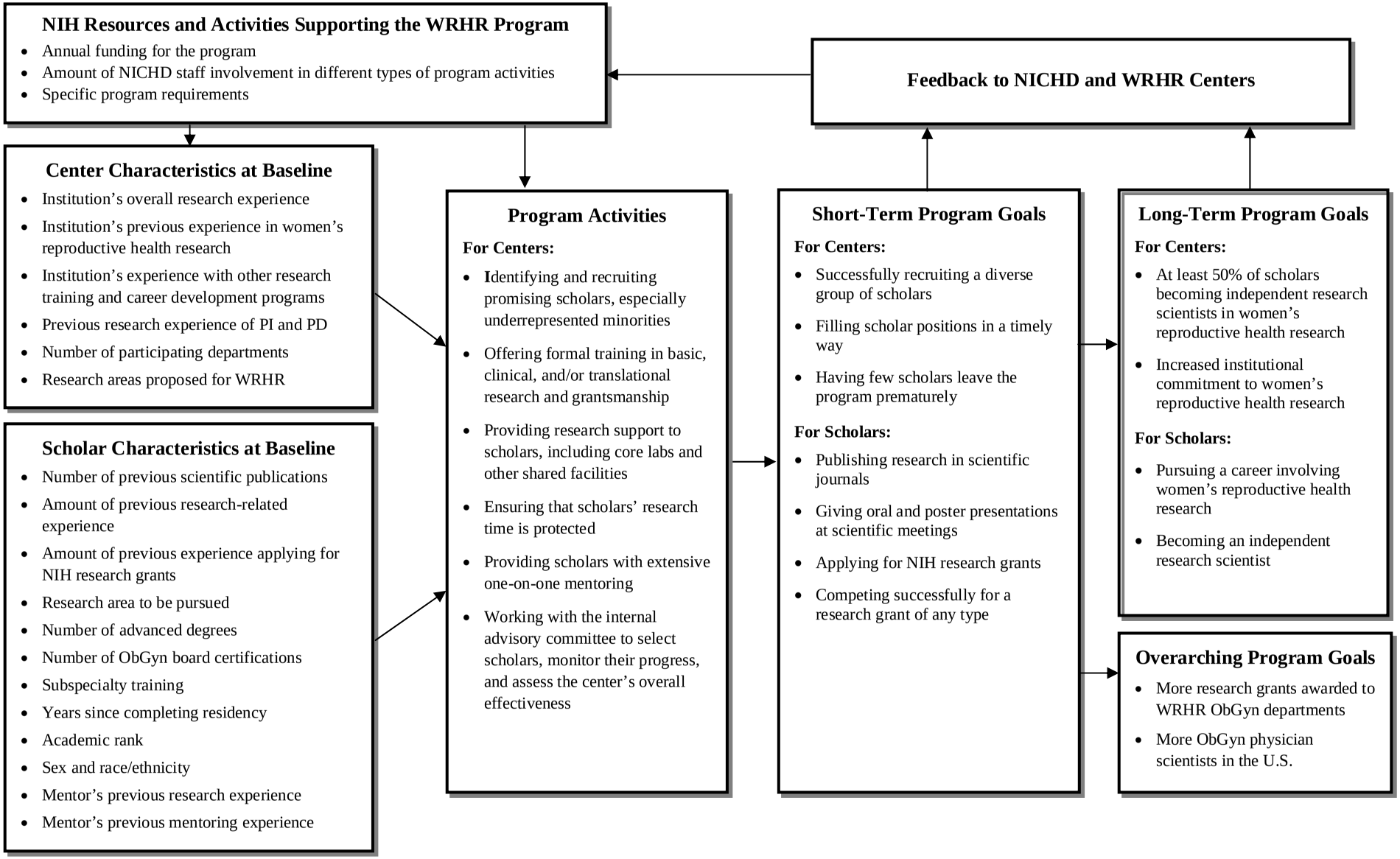

Exhibit 13

MATRIX OF DATA COLLECTION STRATEGIES FOR ANSWERING SPECIFIC STUDY QUESTIONS

	SQ 1	SQ 2	SQ 3	SQ 4	SQ 5	SQ 6	SQ 7	SQ 8	SQ 9	SQ 10	SQ 11	SQ 12	SQ 13	SQ 14
Review of NIH program documents[1]	X	X	X	X	X	X	X	X						
Database searches[2]		X	X	X	X	X	X	X				X	X	X
Website analysis[3]						X	X	X				X		
Telephone interviews:														
Scholars				X	X	X	X	X			X			
Mentors				X		X					X			
PIs, PDs, advisory committee	X			X	X	X					X			
Senior administrators (deans)				X		X								
NIH staff	X													
On-site interviews and observation									X	X	X			
Web-based surveys:														
Scholars							X	X			X			
PIs, PDs, advisory committee	X										X			
Focus groups:														
Scholars											X			
Mentors											X			
PIs, PDs, advisory committee	X										X			
NIH staff	X													

[1] NIH program documents will include WRHR RFAs, grant applications, annual progress reports, official correspondence between WRHR centers and NICHD, and other documents produced by NIH and external organizations.

[2] Databases will include the NIH IMPAC II system (QVR, CRISP database), PubMed database, and the WRHR database.

[3] Websites will include those maintained by NICHD, other NH components, WRHR centers, and other organizations.