THIRTEENTH MEETING OF THE
ADVISORY COMMITTEE ON MEDICAL RESEARCH

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PAHO/WHO EXPANDED PROGRAM ON RESEARCH AND TRAINING
IN HUMAN REPRODUCTION

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I. INTRODUCTION

In May 1971 the World Health Organization issued a Report on a Feasibility Project in Human Reproduction Research. The Project had been undertaken to determine ways in which research into reproductive biomedicine, including fertility regulation, could best be expanded and accelerated. The Report presented an Expanded Program of Research, Development, and Research Training in Human Reproduction which WHO was prepared to implement as part of its mandate to stimulate and expand research in that field. The five-track program has been endorsed by scientists and research administrators as an appropriate mechanism to accelerate the development of new fertility-regulating agents and to expand research and training in human reproduction.

II. RESEARCH AND TRAINING FACILITIES

A. Rationale for a Research and Training Center

It is well recognized that, in addition to the contributions made by individual scientists and small research groups, multidisciplinary research efforts based within any one given institution are necessary for the investigation of human reproduction. A Research and Training Center (RTC) would have under one roof a large number of scientists with expertise in a number of disciplines (critical mass) and facilities for the much needed meetings, seminars, publication services, and others. The frequent provision of these services would disrupt much less the

*Prepared by Dr. Jorge M. Rosner, Latin American Institute of Reproductive Physiology, Buenos Aires, Argentina. Information contained in this report has been taken from the Expanded Program of the World Health Organization.*
overall research efforts of a large institution than it would those of a small group. This approach, which has already been adopted to a limited extent, would be greatly facilitated by an expanded WHO effort. It would be valuable, not only for cross-exchanges of research, but also because it would offer a broad-base research training.

Although it is a major objective of this track of the expanded program to achieve this critical mass within one institution, it is recognized that in certain regions several groups may have already developed a collaborative relationship that might qualify them for consideration as a multicentered RTC.

The proposed RTC is not intended to replace existing centers or new ones that might develop outside the WHO program. Indeed, this new effort should facilitate other programs. Moreover, as the WHO program grows, it may be useful for WHO to call meetings of various centers both within and outside of its network.

WHO support to the RTC would not preclude assistance to other institutions in the form of fellowships for training, project research grants, consultant assistance, assistance with the organization of meetings and seminars, assistance with publications, etc.

To facilitate coordination in reproduction research, WHO will develop and keep up-to-date a list of the facilities for research, training, and services offered by institutions engaged in this field of research.

B. Functions

The functions of an RTC, which fall under the headings of research and development, research training, and services to WHO are as follows:

1. Research and development

   - to carry out multidisciplinary research into human reproduction within the priority areas set for the Program;
-to initiate or participate in collaborative research and development efforts involving a number of institutions;

2. Research training

-to provide research training in reproductive biomedicine and to assist research workers in developing active research programs in their own centers;

3. Services to WHO

-to assist WHO in implementing the Expanded Program by organizing conferences, symposia, and seminars;
-to serve as a regional documentation center;
-to provide a pool of consultants to WHO for the Expanded Program;
-to develop and maintain regional inventories of scientists and other personnel engaged in projects in the field of human reproduction;
-to advise WHO on matters related to research and training in human reproduction.

C. Plan of Action

1. General principles and approach

(a) It is proposed, in developing an RTC, to build on established research groups rather than to create institutions de novo.

(b) In order to fulfill the functions outlined above and to ensure that due attention and emphasis are given to program-related problems that may have a specifically regional character, it is proposed to establish a selected number of RTC’s on a regional basis.

2. Criteria for designation of an RTC

The following criteria will be applied to institutions in a given geographic region when considering their designation as an RTC:
(a) Quality and multidisciplinarity of research activities and their relevance to program objectives. The extent of present, as well as potential collaborative research within the institution would also be considered under this heading.

(b) Quality and quantity of research staff, including stability of staff and ability of the institution to recruit new staff.

(c) Demonstrated ability in research training, with particular regard to the integration or research training within the total institutional research program.

(d) Potential for expansion: The capacity of the institution to undertake a major expansion of research and training in relevant areas, and the ability to attract a part of the additional local and other funds required for this expansion.

(e) Position of institution, internationally, regionally, and nationally. Is the institution well established and stable? Does its influence extend beyond the country? Is it a leading national institution?

(f) Potential for providing services to WHO. The potential willingness and ability of the institution to provide assistance to the Expanded Program in the form of consultants, organization of meetings and seminars, documentation, help with publications, etc., without detriment of its own activities.

3. Procedures for RTC designation

(a) Identification of a potential RTC: consists of a preliminary assessment of an institution's ability to fulfill the criteria for an RTC as outlined above and its interest and willingness to do so. Such an assessment would be based on information derived from (i) site visits by WHO (Feasibility Study and subsequent site visits); (ii) the Advisory Group; or (iii) the Institution. In the latter two instances (ii) and (iii), a preliminary assessment by site visits would also be required.
(b) Consideration by the Advisory Group of background material on an RTC: This background material would include a summary of present activities, staffing, and facilities, potential for expansion, and anticipated funding requirements. At this stage recommendation of a provisional allocation for program development support for the institution would be made within the overall allotment for Track 1 of the Expanded Program to form the basis for further development of a specific proposal regarding support. Assistance from the Expanded Program would be additive and would not be used to replace existing support from other sources.

(c) Consultation between WHO and institution on development of proposal: This consists of the working out of a detailed proposal with a potential RTC. This would be carried out by WHO staff members and consultants including whenever possible one or more members of the Advisory Group.

(d) Final review of proposal and recommendation by the Advisory Group.

(e) Decision by WHO.

4. Financial assistance

(a) Program development support. In view of the resources available to the program, the variety of mechanisms for supporting research included in the program, and of the varying needs of RTC, the concept of "program development support" has evolved. It has been devised to reinforce and build on the existing capabilities of institutions to permit them to expand or accelerate their research, research training, and service functions in line with the objective of the Program.

Such support, given (subject to the availability of funds) for a period of at least 3 years, would provide assistance for some staff salaries, the purchase of equipment, and the renovation of existing space, depending on the needs of different institutions. It is suggested that
the range of program development support that could be considered within present budgetary limitations would generally range from $75,000 to $500,000 per institution per year. Funds of this magnitude would allow expansion of RTC activities, at a level that the Program could continue with some assurance over a 3- to 5-year period. Each RTC would submit a 3- to 5-year budget for its "program development support".

This approach would also be adopted for institutions that are being given interim support before their designation as RTC.

(b) Project support. For research projects, training program, regional seminars, and other activities which they propose to undertake, each RTC would submit specific proposals. These requests for assistance would be reviewed and assessed in the same manner as the requests for assistance submitted to the Program by other institutions and scientists and would be funded under the appropriate track. This twofold support mechanism will ensure that the RTC's receive sufficient development support to strengthen and expand their programs while at the same time ensuring that the funds available for research projects and training activities are awarded on a competitive basis.

5. Specific actions

(a) Designation of specific institutions. Negotiations are to proceed to permit the early designation of RTC's in four regions.

(b) Dissemination of information on the RTC program. The RTC program will be announced to the world scientific community through traditional scientific channels. This will include a description of the standards and responsibilities that have been established, suggesting that inquiries from interested institutions should be directed to the Secretariat.

(c) Designated RTC's.

1. Karolinska Institute, Stockholm, Sweden
Director, Prof. Egon Diczfalusy, M.D.
ii. All-Union Scientific Research Institute of Obstetrics and Gynaecology, Moscow, USSR. Director, Prof. L. S. Persianinov.

iii. All-India Institute of Medical Sciences, New Delhi, India. Director, Prof. V. Ramalingaswami.

iv. C.L.A.B.I.R.

Latin American Institute of Reproductive Physiology, Buenos Aires, Argentina. Director, Dr. Jorge M. Rosner.

Institute of Neurobiology, Buenos Aires, Argentina. Director, Prof. Juan H. Tramezzani.

Center for Studies on Reproduction Buenos Aires, Argentina. Director, Prof. Roberto E. Mancini.

Latin American Center of Perinatology and Human Development, Montevideo, Uruguay. Director, Prof. Roberto Caldeyro-Barcia.

Center for the Study of Reproductive Biology, Santiago, Chile. Director, Dr. Carlos Gómez-Rogers.

III. CLINICAL RESEARCH CENTERS

A. Objective

To establish a worldwide network of WHO Clinical Research Centers to undertake the effective clinical evaluation of new fertility-regulating agents as well as comparative trials of existing agents.

B. General Principles and Approach

Clinical research centers may be expected to fall into several categories. Some centers associated with supporting laboratory and metabolic
units will be qualified to carry out initial trials of new agents on a small number of informed volunteers, to determine incidence of side effects, efficacy, and continuation rates.

C. Criteria for the Selection of WHO Clinical Research Center (CRC)

The following criteria will be used in selecting centers:

1. Clinical research experience; willingness to submit data for review and evaluation. Number of relevant studies and publications. Quality of research. Experience with collaborative research projects. Ability to follow patients enrolled in a clinical study. Interest in collaborative studies of agents affecting fertility.

2. Staff and facilities. Full-time vs. part-time staff. Access to patients. Quality and breadth of supporting laboratory facilities. Training and experience of staff. Ability to recruit new staff. Potential of increased local support for expansion of staff and/or facilities.

3. Official status and/or academic affiliations of the institution. Its position nationally, regionally, internationally.

D. Implementation

In the first phase of the Program, emphasis will be given to the selection and designation of up to 25 established units with wide geographic distribution.

During the Feasibility Study consultants and WHO staff visited a number of potential CRC's which met the criteria defined above. Other centers have been identified following further discussions and site visits. Additional site visits and/or questionnaires will determine the qualifications of other centers and the type of studies individual centers are best qualified to conduct. To initiate this activity, some of the centers which are clearly qualified to contribute to the objectives of the Program will be selected and designated as Clinical Research Centers following the preparation of detailed proposals.
At the same time as the first group of WHO Clinical Research Centers are selected and designated, a panel of additional centers, which meet the criteria for a CRC and have expressed interest in collaborating in the Expanded Program, will be established. Panel centers may be invited to participate in WHO-sponsored clinical trials or task forces whenever the need arises, and, as the Expanded Program develops, may be recommended for CRC designation; (also once a CRC has received support for several years it may move from designated CRC status to the panel).

E. Financial Assistance to CRC's

It is proposed to provide each center selected as a CRC with program development support to assist in developing and maintaining the staff, equipment, and facilities necessary to undertake clinical studies. Centers would be eligible to receive up to $30,000 per year, based on an assessment of need and capacity; present level of operation and funding; ability to undertake Phase I and II studies (as these studies require a more extensive supporting laboratory facility, a higher level of program development support would be justified); and local economic conditions (i.e., salaries and other costs differ significantly among countries). The amount of program development support each center would require would be assessed during site visits and the centers assisted in preparing detailed budgets for submission to WHO. Program development support could be used for staff salaries, equipment, and for essential renovations. Some centers may require more support in the first 2 years than in subsequent years to cover the cost of essential renovations and equipment purchases. Program development support would assure the continued availability of essential staff and facilities to undertake new studies as they are developed, and would provide stability by reducing the dependency of centers on individual project support.

In addition to program development support, CRC's would receive more funds as needed to cover the extra costs associated with the conduct of specific collaborative studies in which they participate. Panel
centers participating in specific studies would also be eligible to receive project support. These funds would be provided from the task force component of the Expanded Program.

F. Administration and Review Mechanisms

As part of the review mechanisms established for the Expanded Program an 8-10 member Clinical Review Group will be established to assess recommendations of the site-visit teams regarding the designation of specific centers as CRC's; to review budgets for program development support received from these centers; and to make recommendations and review proposals for collaborative clinical studies to be undertaken by the CRC network.

Specific suggestions for collaborative clinical studies could originate with members of the Advisory Group or with the CRC Review Group itself, a task force, a CRC, an RTC, an independent institution or investigator, a pharmaceutical company, or with WHO staff or other individuals or groups. A decision to recommend a WHO-sponsored clinical study would be based in part on a review of toxicologic and metabolic data to ensure that such data justify the proposed clinical protocol. When appropriate the CRC Review Group would also be expected to recommend an institution or individual to serve as "principal project coordinator" for each WHO-sponsored clinical study. The project coordinator would accept responsibility for supervision of the overall study including collection and analysis of data. Recommendations of the CRC Review Group would be submitted to the Advisory Group and assessed in terms of overall program priorities and objectives.

Since collaborative clinical studies involve a number of institutions working on a common project, such studies would have task force status or would represent part of a larger task force and would be funded from this component of the Expanded Program.
G. Collaborating Laboratories

To support the CRC network several collaborating laboratories will be selected and designated as WHO Collaborating Laboratories in Human Reproduction.

The primary function of the laboratories will be to provide sophisticated, comparable, laboratory analyses for CRC's in the region.

The initial objective will be to select existing laboratories in preference to the establishment of a new facility. Initial priority will be given to establishing uniform hormone assay procedures in these laboratories. The Collaborating Laboratories would also be expected to assume the functions of a Regional Reference Center. These responsibilities include the provision of specialized information and consultation to other laboratories in the Region, the training of technical and scientific personnel, and the conduct or research to improve existing methodology. Collaborating laboratories could be a part of a Research and Training Center, Clinical Research Center or could be located in an independent institution.

In general, laboratories capable of performing a variety of analyses will be selected in preference to laboratories which may be highly competent in one specific area. It is recognized, however, that occasionally it may be desirable to designate a laboratory as a reference center in a specific procedure. (For list of research and panel centers, see Table I).

IV. TASK FORCES FOR COLLABORATIVE RESEARCH AND DEVELOPMENT

A. The Rationale for the Task Force Approach to Research and Development

The term task force in the Expanded Program refers to programs of directed, collaborative research involving a number of scientists and institutions.
TABLE 1

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<th>Clinical Research Centers</th>
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**Panel Centers**

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**TOTAL** - - - - - 3,305

**GRAND TOTAL** - - 4,370
The importance of collaborative research is obvious in certain aspects of research in fertility regulation such as clinical trials where comparable data are required on different populations. Its value is apparent also in the development of new agents for fertility regulation, where an organized, collaborative approach brings together the skills and expertise of chemists, biochemists, physiologists, pharmacologists, and clinical investigators. With respect to any given subject area in the field of reproduction the collaborative approach can lead to:

1. a more comprehensive review of the present status of knowledge and needs for research in that subject;
2. a clearer definition of priorities;
3. the sharpening of hypotheses; and
4. the decision by a scientist as to where he can best make his contribution in relation to the work of other scientists.

B. The Scope of Task Forces in the Expanded Program

Research projects in the priority areas of the Expanded Program will be carried out primarily through task forces for collaborative research. This strategy has been adopted for several reasons:

1. it should enable the Program to make best use of limited funds by systematizing the research effort in the priority area selected;
2. the collaborative approach to research and development has been little applied to date in the field of human reproduction and fertility control. Its adoption in this program would thus complement the activities of other agencies including Medical Research Councils in which other approaches, including emphasis on open application for research support, are utilized;
3. WHO has achieved a considerable measure of success in promoting collaborative research in a number of other areas such as virology and cancer pathology. WHO's international character places it in a unique position to promote collaborative research among scientists from different countries in the area of human reproduction;
4. the global nature of the Expanded Program and the limited funds available to it make it difficult to envisage the setting up of an "open" granting mechanism providing support to individual scientists, at least for the first few years of the Program. In view of this it is proposed that at present open applications will not be solicited. It is hoped at the same time, however, that the scientific community, made aware of the task force activities, will contribute new ideas and suggestions to this component of the Expanded Program. On the basis of experience gained with task forces, provided additional funds become available, and with the establishment of an appropriate administrative infrastructure, it may be possible to consider the development of an openly advertised granting system as another component of the Expanded Program in the future.

C. The Organization of Task Forces

1. Types of task forces

It is possible to envisage various types of task forces. Some would consist only of groups of scientists meeting once or twice a year to review progress in a given field. Others would involve such meetings and the support by the Expanded Program of relatively small collaborative research proposals. A few would represent large-scale collaborative efforts requiring substantial financial support. Some task forces would be short-term, others would continue over a number of years.

2. Stages in the planning and implementation of task forces

In general the organization of task forces is expected to proceed in the following manner:

(a) Recommendation by the Advisory Group on potential task force subject areas.

(b) Convening of a preliminary meeting of scientists active in the selected field to explore the possibilities and desirability of a
systematic, collaborative research program. Such meetings will be supported by the Expanded Program. The objectives of these meetings would be to indicate research priorities, and the feasibility and timeliness of a collaborative research program in the given subject area.

(c) The report of the preliminary meeting will constitute the basis for the Advisory Group's recommendation to support a second planning meeting during which a general plan of action and research projects by specific research scientists would be spelled out, and a timetable and budget estimate prepared by the scientists involved.

In some areas it may be possible to telescope the stages described in (b) and (c) into a single meeting.

(d) The overall task force proposal and its component projects will be reviewed for scientific merit and budgetary soundness. The Advisory Group will then make recommendations for approval, modification, or rejection of the task force including an allocation of resources.

(e) Formal approval of the task force by WHO, followed by the preparation of research contracts with the scientists and institutions involved.

(f) Although all task forces will report annually to WHO, some components of the collaborative research effort might report, be reviewed, and present requests for additional support more frequently.

(Further details on the organizational procedures for task forces are given in the section on Review Mechanisms).

D. Plan of Action

To initiate the task force component of the Expanded Program, a series of planning meetings will be organized in the areas suggested below. The order in which the areas are listed reflects the priority for the organization of meetings and does not necessarily indicate research priorities which may emerge as a result of these meetings.
1. Prostaglandins in fertility regulation

Prostaglandins influence various stages of the reproductive process providing, therefore, a potential tool for the control of fertility. Several areas of prostaglandin research require urgent studies. These include choice of compounds, route of administration, and dosage of prostaglandins as abortifacients as well as the side effects associated with their use. Further problems include the development of practical techniques of prostaglandin determination in body fluids, metabolic studies, the role of prostaglandins in male fertility, and the effects of prostaglandins on the female reproductive tract in general as well as on ovarian function.

2. Methods for the regulation of ovum transport and implantation

It has been repeatedly shown, mainly in animal studies, that postovulatory fertility control can be achieved by interference with ovum transport in the fallopian tube, and by altering implantation mechanisms in the uterus by nonsteroidal and steroidal compounds. Accordingly a task force which included research on the reproductive processes involved, on pharmacologic models, on contraceptive screening, and on clinical work where feasible in this area, could accelerate the development of postovulatory antifertility agents for human use. More specifically such a task force would concern itself with components such as:

(a) tubal events, e.g., ovum transport and development, and the hormonal, metabolic, and pharmacodynamic milieu in which these events occur;

(b) the uterine events, particularly around the time and following implantation, e.g., development and differentiation of the blastocyst and the hormonal, metabolic (enzymatic, osmotic, and ionic) and hemodynamic changes in the endometrium related to the implantation of the blastocyst;
(c) compound synthesis based on research on tubal and uterine events and systematic "structure" activity relationship studies, for animal screening of potential postovulatory fertility regulating agents; and

(d) clinical pharmacologic studies where possible.

3. Methods for the regulation of sperm maturation and sperm survival

Increasing evidence points to the importance of the epididymal maturation of sperm in the process of attaining full fertilizing capacity. Animal studies indicate that certain types of compounds might interfere with epididymal maturation of sperm without any apparent interference with spermatogenesis and libido. The relatively slow progress in this field could be accelerated by a task force approach, including appropriate animal studies and clinical pharmacologic investigation.

The factors influencing sperm survival in the female genital tract are also incompletely understood; the task force approach could accelerate development in this area: problems to be studied would include the influence of steroidal and other agents, changes occurring in the genital fluids of the human female, and their influence on the fertilizing ability of the sperm.

4. Acceptability profiles of fertility regulating methods

The search for new methods of fertility regulation has consistently been based on steps in the reproductive process susceptible to interference, rather than on a consideration of the various cultural, social, and logistic factors that determine widespread acceptance. A task force involving appropriate social and biomedical scientists could design a series of studies that would provide evidence regarding the acceptability of new approaches to methods of regulating fertility in different cultures. Such data would influence the formulation of research priorities and the direction of biomedical research seeking to develop new methods of fertility control.
5. **Ovulation detection**

Because of the very short fertilizable life of the freshly ovulated human ovum there has been a long-standing desire for a simple "kitchen" method by which women could easily and accurately detect the time of ovulation. The development of such a method would increase the reliability of the so-called rhythm method of contraception and could also provide a valuable tool to be used in developing newer methods of fertility regulation.

A systematic approach to the review and study of the various parameters which are characteristic of ovulation and which would lend themselves to easy detection could be rewarding.

6. **Baseline studies**

Refer to studies in which a number of clinical characteristics of the menstrual cycle and their underlying physiological, endocrinological, and biochemical basis would be estimated in populations of women living in various parts of the world. The assessment of such clinical and "laboratory" parameters of the menstrual cycle would be very helpful in assessing the various possible effects of different types of fertility-regulating agents, and to distinguish these from changes attributed to, but not in fact associated with, the use of these agents.

The proposed baseline studies could thus also include investigation of a number of other processes e.g., metabolic (carbohydrate, lipid, etc.), hematologic, and relevant general clinical symptoms and signs. The establishment of such baseline values would facilitate the assessment of possible side effects which may be associated with the use of different fertility-regulating agents as well as their modes of action.

7. **Releasing factors**

The synthesis of a number of polypeptides with LH and/or FSH releasing properties may open a new avenue in the diagnosis and treatment
of gonadal dysfunction. Furthermore, in view of the short fertilizable life of the freshly ovulated human ovum, the use of releasing factors to induce ovulation at a given time could be studied with the possibility of improving the efficacy of the so-called rhythm method of fertility regulation.

A number of polypeptide analogues with antagonistic properties may perhaps also be investigated.

A task force might be convened to identify those areas in which collaborative efforts may prove to be most useful. This task force could for example plan and initiate a collaborative program in a number of areas such as the assay of releasing factors, the synthesis and assay of antagonists and the parameters to be studied in the clinical assessment of various synthetic releasing factors.

8. Agents stimulating gonadal function

Progress towards the elucidation of the structure of gonadotropins suggests that a task force approach could be directed towards the study of the biochemical, physiological, and immunological properties of the gonadotropin subunits. Such studies may result in new leads for fertility regulation.

A limited comparative study of the proper posology of human gonadotropins for inducing ovulation in various geographic areas might also be a suitable subject for a task force approach.

Another problem in this areas is the comparative assessment on a limited scale of a number of synthetic agents stimulating ovarian function.

It seems also of importance to evaluate the clinical effectiveness of agents presently used to stimulate testicular function.

9. Pharmacological models in research and development of fertility-regulating agents

There is a great need for better animal models which can be used in a predictive manner to test fertility-regulating agents. The major
11. Assessment of the sequelae of abortions

Abortion is widely used as a fertility-regulating method in a number of countries. There is little information on the early, and especially on the late somatic effects of the various types of interventions and the task force approach might facilitate the availability of valuable information in this respect.

A task force should be organized to develop suitable protocols to be followed in this study. This could be followed by a pilot study in one or several countries in which legal abortion has existed for sometime. Based on the experience and recommendations of the pilot study larger multinational collaborative efforts could be organized.

12. Assessment of the sequelae of vasal occlusions

Vasectomy and other forms of vasal occlusion are used fairly extensively to regulate fertility in certain parts of the world. Surgical procedures for the recanalization of the vas have been greatly improved recently, with claims made for improved reversibility. Divergent viewpoints have been expressed about the sequelae of vasectomy, but existing studies are generally unsatisfactory because of deficient methodology. In addition several aspects have hardly been examined.

Systematic, collaborative, and comparative research efforts on sequelae of vasal occlusion could provide solid information of direct relevance to the clinical management of individuals selecting this method of fertility regulation.

V. RESEARCH TRAINING STRATEGY IN THE EXPANDED PROGRAM

Research training enters into several components of the Expanded Program. Wherever possible research training supported by the Program will be directly related to program objectives and consistent with research priorities.
A. Objectives

The objectives of research training supported within the Expanded Program may be summarized as follows:

(a) to increase the quality and quantity of scientific manpower working in productive laboratories on program-related research including clinical studies of fertility-regulating agents;

(b) to attract scientists from related disciplines into reproduction research;

(c) to improve research training strategy by establishing a working group to maintain an ongoing assessment of research training need and capabilities.

Various approaches to research training have and are being supported by different agencies. These efforts are continuously adding to the general pool of scientists working on research in human reproduction. To complement these activities the Expanded Program will focus on training investigators who will be qualified to contribute to the Program's objective, including the relatively neglected field of clinical trials.

The need for a multidisciplinary approach to research in human reproduction forms the basis for the second research training objectives of the Program.

B. Activities

Provision is made in the Expanded Program to support within the priority areas four types of research training activities: research training programs, research training grants to individuals, "reentry" grants, and a working group on research training strategy.

1. Research training programs

Research training courses may be divided into long-term (more than 3 months) and short-term (1 to 3 months).
(a) **Long-term courses**

Long-term courses consist of formal teaching by lectures, seminars, and laboratory exercises, and of some supervised research. Such courses cater to laboratory and clinical investigators and provide a broad-base introduction of reproductive biomedicine. They assume that a scientist wishing to carry out independent research will undergo a further "apprenticeship" by participating in an ongoing research project. Support, particularly within the framework of RTC's would appear to be warranted for this type of program, and would include assistance to the institution for staff, equipment, and other costs associated with the running of the course, as well as a guarantee of a certain number of individual research training grants for suitable qualified trainees.

Another approach to training is that found in graduate university departments at the doctorate in philosophy or science level. This training aims at producing scientists in any of several biological sciences while maintaining a focus on reproductive biology. Since relatively little emphasis is being given to strengthening this approach to research training it is suggested that the possibility of developing proposals from selected universities be explored.

(b) **Short-term courses**:

Short-term courses seek to impart specific knowledge or skills to scientists active in research work. Such courses provide a flexible means of introducing scientists to new concepts and techniques, such as radioimmunoassay or computer handling of data. This approach has in the past proved rewarding and increased support to such activities as could be given within the Expanded Program. In particular, the need for solid clinical trials suggests that a major training effort should be directed at acquainting pharmacologists, epidemiologists, and clinicians with basic principles and techniques. Assistance would include staff support, necessary equipment and supplies, and stipends for trainees.
2. Individual research training grants

Research training grants will be allocated for the following purposes: to enable trainees to participate in the long-term training courses outlined above; to assist research workers in obtaining "apprenticeship" training by taking part in an ongoing research project; and to allow scientists to spend a short period in another laboratory to exchange views, learn, or teach a technique. The awards made under the first two headings would be usually for 1 year, but may be extended to 2 years.

3. "Reentry" assistance

Where needed, a part of the research training period would be devoted to drawing up plans with the help of the training institution for a research project to be carried out on return to the home institution. Following approval by the institution, equipment would be ordered so as to be available on the trainee's return.

4. Working group on research training strategy

This group will be primarily responsible for coordinating the research training activities of the Expanded Program. It will address itself on a worldwide basis, and with due recognition to regional needs, to such issues as the determination of the number of scientists required, the disciplines that should be involved, the ways of building up nuclei of research scientists in institutions, countries and regions, the value of different types of training experiences, the actual training resources available, and the coordination of research training efforts. The working group provides guidelines on research training strategy and research training programs in this field. It will also be responsible for reviewing all proposals for training activities.
VI. OTHER PROGRAMS

A number of the components of the Expanded Program have been an integral part of the WHO Program in human reproduction for several years. The Expanded Program will facilitate an enlargement of these activities.

Program components falling into this category include supplies for collaborating laboratories ("spare-parts program"), a "small-contract program", consultant assistance, and seminars, workshops, and publications.

A. Supplies for Collaborating Laboratories ("Spare Parts")

The spare-parts program was expanded on a pilot basis during the Feasibility Study. To date spare parts, accessories, and reagents amounting to $30,000 have been ordered for 45 institutions in 23 countries. Each institution was awarded from $400 to $1,200 (one to three units of $400 each). The number of units allocated to each institution was based on an assessment of individual need, the size of the laboratory, and the extent to which it is engaged in research relevant to human reproduction. Institutions known to be active in reproduction research and located in countries where the availability of spare parts and reagents are limited were invited to avail themselves of this service. This program will continue to receive priority. The unit system of allocating funds has been maintained. In 1972, the unit size was increased to $500; large institutions with a major reproduction research program were eligible to receive up to four units annually. Included in this amount was a trial program providing airmail subscriptions to several key journals selected by the institution.
B. Small-Contract Program

The major objective of the small-contracts program is to provide a mechanism that will permit WHO to respond promptly to small requests for research assistance.

Requests for the following kinds of assistance will be included in such a program:

(a) support for projects relevant to established research priorities requiring only limited support e.g., a scientist wishing to test a hypothesis before developing a major research proposal;

(b) research support for fellows preparing to return to their own countries where such support may be difficult to obtain locally;

(c) assistance in the purchase of equipment for a scientist working in a geographic area where such equipment is not generally available;

(d) request for technician assistance where it can be shown to be essential to the conduct of a relevant research project.

Individual contracts awarded under this Program will be limited to $3,000 per year for a maximum of 2 years and will be processed under the existing WHO mechanism for research contracts. The small contracts program will enhance the flexibility of the Expanded Program by providing a means of directing essential funds expeditiously to scientists at critical periods.

C. Consultant Assistance

As part of the Expanded Program short-term consultant assistance will be provided to investigators in developing their research programs and in the design of specific proposals.

D. Seminars, Workshops, and Publications

The WHO Expanded Program has a continuing role to play in sponsoring, assisting in the organization of seminars and workshops, and in the printing
for distribution of reports and proceedings related to reproduction research. This mechanism, which could include the translation as well as the publication of selected proceedings, is most useful in promoting scientific interchange across national frontiers and in reducing the scientific isolation experienced by some research workers.

VII. DOCUMENTATION CENTER

The proposal for Track IV, the "Documentation Center" component of the Expanded Program is currently limited to developing improved information storage and retrieval within the MEDIARS system. The initiative has been taken by the Biomedical Documentation Center of the Karolinska Institute, with encouragement from the U.S. National Library of Medicine.

Information Dissemination about the Expanded Program

The Program recognizes the need to inform the scientific community rapidly, and on a continuing basis, of plans for the Expanded Program, and its development.

A short pamphlet or handout will be prepared outlining the aims, scope, and mechanisms of the Expanded Program as a first stage. This document will indicate in broad terms the general Program's strategy and the areas of research that will be explored for their potential for collaborative research.