

AN INTERIM EVALUATION
OF THE
BOSTID RESEARCH PROGRAM
ON
ACUTE RESPIRATORY INFECTIONS IN CHILDREN

REPORT TO THE DIRECTOR

BOSTID RESEARCH PROGRAM

BOARD ON SCIENCE AND TECHNOLOGY
FOR INTERNATIONAL DEVELOPMENT

NATIONAL RESEARCH COUNCIL/NATIONAL ACADEMY OF SCIENCES

I. INTRODUCTION

On March 16, 1988, you initiated the appointment of an ad hoc Panel for Evaluation of the BOSTID Research Program on Acute Respiratory Infections in children. An evaluation at this time was necessitated by administrative and funding considerations, and you asked that the Panel's report be submitted by May 31, 1988, prior to presentation of the progress reports of the ARI grantees scheduled for October, 1988. The membership of the Panel is listed in Appendix I.

Of necessity, the Panel devoted the time available to a general review of the total ARI Program, feeling that it was premature to judge individual projects. Material related to individual projects and reports of consultant site visits to them was reviewed to obtain some measure of overall progress and of prospects for the future. What has emerged is a strong endorsement of the high priority assigned to ARI studies in the developing world, an expression of admiration for the effort made by BOSTID ARI staff, the collaborating LDC scientists and institutions, and their consultants to date, the recommendation that a reduced number of projects continue with more adequate funding per grantee, and suggested criteria for evaluating future proposals.

The Panel omitted for its deliberations the amount and sources of potential future funding and the location of the program's administrative/advisory management.

II. BACKGROUND

The background for the ARI Program and its method of operating to date are thoroughly documented in the "Terms of Reference" assigned to the Panel for Evaluation (Appendix 2) and its appendices (I. Program Announcement; II. List of Grantees; III. Volunteer Consultants and Reviewers). The latter represented the major components inherent in program objectives: epidemiological, clinical and microbiological services, and data management and analysis.

BOSTID described the ARI Program as follows:

"This project seeks to elucidate the etiology and epidemiology of acute respiratory infections, the second greatest cause of child mortality in developing countries. The research emphasis is on adaptation and development of rapid diagnostic methods, or population based studies to assess the incidence and severity of infections and to describe clinical and radiological features associated with specific pathogens. The studies should contribute to development of protocols for diagnosis and treatment in clinical and community settings. Cooperative activities include collaboration on data processing and preparation of a laboratory manual and training courses for viral and bacteriological diagnoses."

The chronology of the steps taken to achieve these objectives is given in Appendix 3. Missing is the fact that grants were awarded to 12 institutions in developing countries, with two additional grants being awarded for diagnostic test development and evaluation. Four of the initial grants were completed in 1987, six were to be completed in 1988, and two in 1989. The participants in the workshops listed in Appendix 3 are shown in Appendices 4a thru 4d.

III. PANEL PROCEDURES

The Panel met twice, on April 6 and April 28. Summaries of the proceedings of these two meetings were provided to you and to Dr. Judith Bale. At its first meeting, the Panel interviewed five consultants, two in person (Drs. Charache and McIntosh) and three by conference call (Drs. Berman, Monto, and Pastides). Prior to the meeting, the Chairman had an opportunity to discuss the program with a sixth consultant (Dr. Selwyn). The Panel was impressed by the time and talent freely and willingly provided by all consultants to the program, and asked for a listing of all consultant visits (Appendix 5).

At the second meeting, the Panel discussed memoranda from Drs. Kunin and Jordan distributed after the first meeting (copies provided to you and Dr. Bale), focusing particularly on the general and specific evaluation questions of the "Terms of Reference" and on criteria for selecting future study sites. The Panel sought further information regarding program particulars to substantiate interim assessment with available data, acknowledging that performance of individual grantees could not be evaluated until the October meeting. How many children have been enrolled? (Appendix 6). How many projects stated that autopsies or needle biopsies would be performed? (Appendix 7). How many were actually done? (Not available).

How many grantee personnel were trained in the other laboratories; six from six different projects for periods of four to six weeks (Appendix 7). How many specimens were received by bacteriology (1,607), and virology (1,782) reference laboratories? (Appendix 7). What were the results? (currently unavailable). Four of five reference laboratories furnish their services at no cost to BOSTID.

BOSTID staff members in charge of ARI finance and purchasing management met with the panel and provided the following information on program costs:

	<u>Amount (M)</u>	<u>%</u>
Grants	\$3.1	55.8
Networking	1.7	30.6
Administration	0.75	13.5
TOTAL	5.55	99.9

3

It was explained that an 11.4% overhead is reflected in all figures; that travel costs to coordination meetings, consultancy costs and as much networking as was foreseen at time of issue was written into grants; that the networking budget contains the remainder of coordination meeting costs, workshops and sabbatical leave staff consultant salaries; and that the administrative budget includes staff time spent arranging the network of meetings, workshops, consultant visits and procurement and delivery of equipment, supplies and specimens. With regard to the latter, these items include reagents, cell lines, disposables and equipment purchased with grant monies.

Finally, the Panel asked to review the last progress report for each of the 12 projects and all of the trip reports submitted by consultants. Three panel members extracted information from the files of the 12 projects by reviewing four projects each, using a standard form (Appendix 8). The panel chairman read material from all 12 projects, but did not participate in the standardized analysis.

IV. OBSERVATIONS

The Panel agrees that Acute Respiratory Infections (ARI), particularly Lower Respiratory Infections (LRI), are collectively a leading cause of death among infants and young children <5 years and is estimated to be responsible for 25% to 33% of all deaths in this age group (4 to 5 million deaths/year) in developing countries.

This estimate is based on numerous reports from physicians, including one of the program consultants, in many Lesser Developed Countries (LDCs). Evidence that LRI is the cause of death is drawn largely from verbal autopsies, observation by health workers, and public health statistics. Good clinical microbiological data are difficult to come by, and gross and microscopic examination of pulmonary tissues, particularly any related to total mortality rates, are rare. Reliable microbiologic studies of such tissues (culture and/or staining) are non-existent. Thus, although rudimentary information has been accumulated regarding ARI mortality, the basic descriptive epidemiology is incomplete, the etiologic agents are not well understood, and the risk factors for these deaths are not well described. Acquiring this information is essential, and the BOSTID ARI program is the only program presently working toward this goal.

The ARI program has two underlying goals 1) to define the etiologic agents and environmental risk factors for ARI in developing countries and 2) to transfer technology and expertise to the developing countries. From the available data, the Panel can not evaluate how well the program has determined the agents and risk factors of ARI in LDCs. Presumably, information to judge this will

be available at the October meeting. Some information (e.g., the number of patients enrolled with URIs, LRIs, hospitalized LRIs, and LRI deaths, the number of specimens tested, and the number of specimens positive by test) suggests that the project should provide valuable information about the clinical and epidemiologic characteristics of ARI in the study countries. The summary sheet of patients enrolled (Appendix 6) and review of the 12 sites suggest that about 5,200 hospitalized patients with ARI will be studied and about 3,400 children followed prospectively in community studies. From a review of the last yearly reports and consultant site visit reports, it is inferred that 11 of the 12 sites had either good or adequate patient enrollment, but there was not enough information to evaluate the quality of the clinical and epidemiologic data on these patients. Although the information on URIs, LRIs, and hospitalized LRIs may be adequate, a number of projects will lack reliable rate data based on well defined populations.

It is appropriate that the first coordination meeting (June, 1984) and first workshop (January, 1985) considered epidemiologic design. Unfortunately, the annual reports reflect continuing difficulties with recruitment and retention of the desired populations. All investigators seem to have fallen short of their targeted population sizes. Whether they have been able to keep track of individual subjects and can calculate the frequency of illness and death on the basis of person days, months, or years remains to be seen.

It is not clear how much information will be obtained on ARI deaths. The etiologic studies have not gone so well. Interim review suggests the bacterial diagnostics was adequate at most sites (at least adequate at 9/12 sites, poor at 2/12 sites, and not enough information at 1/12 sites). From the information available, it is clear that the quality of bacterial diagnostics varied at some sites during the study and this needs to be considered in the data analysis. Viral diagnosis did not appear to go as well as bacterial diagnosis. Panel reviewers inferred that 5/12 sites had either good or adequate viral diagnostics (for 2 of these 5, viral diagnostics were poor for part of the study) 6/12 had poor viral diagnostics, and 1/12 was too soon to tell. Many of the deficiencies in the etiologic studies result from the time it takes to develop the laboratory expertise to do them. This apparently took longer than anticipated by BOSTID staff and its informal advisory committee (Drs. Charache, Denny, Granoff, Kendal and McIntosh). The deficiencies persisted in spite of visits by experts who left detailed recommendations. Problems identified at one visit were often still present at the next visit, but this visit was usually made by a different consultant. BOSTID had hoped that the adoption of common laboratory procedures and environmental core data that would yield comparable information on different study population would permit consultants to network between projects. This expectation must be examined in light of presentations at the

October meeting, for it is possible that more frequent visits by the same consultant for longer periods of time could be more effective.

Despite these shortcomings, the panel is impressed by the skill and dedication with which BOSTID staff, particularly Dr. Judith Bale, and its consultants designed, implemented and managed a very ambitious program to define the etiology and epidemiology of acute respiratory infections in LDCs. Because of the number of illnesses and the number of potential pathogens, such studies are complex and demanding even in developed countries. And they are expensive. The funds expended by BOSTID in support of 12 projects for three years would support no more than two or three such projects in the U.S.

In retrospect, it is clear that many difficulties, some of which were probably anticipated, delayed and continue to hamper the work of the grantees. Some of these culled from progress reports include local economic problems, strikes, construction delays, changes in principal investigator, indifference of Ministry of Health, antagonism among staff members, shift of hospitals, cultural/religious beliefs that preclude autopsies and collection of blood specimens, long travel time from hospital or laboratory to community site, movement of children between households, and the complexities of data processing. It is not easy to initiate sophisticated research projects in areas where there is little research tradition. It is not easy to transfer sophisticated clinical, epidemiological, and laboratory skills to investigators and their technical staffs in the developing world in a manner that provides training without offending. The Panel applauds BOSTID for its effort to do so.

The ARI program has invested a great deal of effort in developing the investigators at the individual study sites. The backbone of this training and development has been the four workshops (Virology in May 1985, Bacteriology in June 1985, Microcomputer/Data Management in January 1986, and Data Analysis in June 1987) and the yearly coordination meetings with the principal investigators in June 1984, June 1985, December 1986, and June 1987. The workshops and coordination meetings have also given the investigators a chance to meet investigators from other developing countries as well as experts in the field. In addition, between 1984 and the end of 1987, an average of 5 site visits/per grantee have been arranged with outside consultants covering laboratory diagnosis, study design, or data analysis. Seven training visits by the local investigators to other institutions were also arranged. The review of the last yearly reports, site visit reports, and discussions with six of the consultants suggest that this effort paid considerable dividends in developing the investigators. Further, the program has done what appears to be a particularly good job of getting the needed resources (equipment and supplies) to the study sites and keeping good records of moneys spent. Their centralized purchasing

program has bypassed some of the difficulties many projects in developing countries have in getting equipment and supplies. There is also a quality control program, but results from this program are not yet available.

In summary, the ARI program has begun to develop the expertise in several countries to do the comprehensive studies it set out to do. It is likely that some of the questions about ARI and etiology will be answered by a few of the completed studies, but many questions will remain unanswered. At present, none of the projects is judged to be adequately prepared to answer fully the questions posed. A good start has been made, but more time and effort are needed. The Panel will be pleased should the October meeting prove this judgment to be wrong.

V. EVALUATION QUESTIONS AND ANSWERS

1. Is the BOSTID program addressing the key issues identified at the 1983 North Carolina meeting related to the etiology and epidemiology of ARI?

Yes. The key issues concerning the epidemiology and etiology of ARI in children in the developing world are being addressed by this program.

Are the goals of the program worthwhile and realistic?

Yes. The goals are very worthwhile in view of the evidence of the importance of ARI as a cause of mortality among young children in developing countries. The basic data sought are essential to the institution of rational control strategies, e.g., prevention with vaccines or treatment with antibiotics.

Have staff and grantees made appropriate efforts to realize these goals?

Yes. Appropriate efforts have been made by the staff and grantees within the constraints of establishing an ambitious worldwide program.

2. Is the research carried out through the program sound, and does it show promise of producing results that will eventually help control ARIs in children?

Yes, eventually. The only way to obtain important data on ARI is to work on the problem in the field and to overcome inherent local constraints of limited manpower and technology. This has been carried out by the BOSTID staff, consultants and some grantees in a sound manner which promises to provide answers to the questions posed.

Will BOSTID studies provide understanding of the relative roles of viruses and bacteria in ARI?

Eventually, but not within the current time-frame. Laboratory skills, particularly in virology, are not yet adequately developed.

The etiologic studies can be simplified with little loss of information by eliminating isolation studies and using only antigen detection assays. For diagnosis of RSV, parainfluenza viruses, and the influenza viruses, sensitive and specific antigen detection assays (especially with monoclonal antibodies available or soon to be available) are available. Antigen detection can be applied to bacterial etiologic studies with less sensitivity, but sufficient sensitivity to estimate the contribution of some of the agents. Sites where the greatest mortality occurs may not be capable of doing the diagnostic studies, and for these sites it would be reasonable to do antigen detection studies at a reference laboratory. It is also important to have continuous quality control checks of diagnostic results. A short enough turnaround time on these checks is important so that corrections in testing can be done quickly. This will ensure that quality diagnostics are available, and might be best done by pairing sites with a reference laboratory.

Is the epidemiologic design of the studies adequate to identify the appropriate risk factors for ARI?

The Panel does not have sufficient information to answer this question. It has the impression that a system for categorizing nutritional status, family size, birth order, receipt of measles vaccine, housing, etc. has not been standardized and widely applied.

3. Are the researchers and institutions involved in these studies appropriate?

The institutions selected for participation were screened carefully by BOSTID; a majority have now shown themselves to be appropriate for the mission.

Are there other institutions not presently part of the program which should be included?

The Panel is aware of the merits of locating a project in Africa, but cannot identify a suitable institution other than the one in Kenya.

Are there projects which should be restructured or not continued?

Yes. Some projects have performed poorly and should be phased out after analysis of data collected to date. If it is apparent in October that their data are meaningless, they should be discontinued promptly.

Others should restrict themselves to epidemiologic and risk assessment studies, and several of the most productive groups should continue long-term, in depth comprehensive studies of the etiologic agents and pathogenesis of ARI. Most sites do not have the breadth of resources to embark on the comprehensive studies, but some probably can do quite well on more focused and simpler studies to answer few questions at one time. For example, it would be important to get additional descriptive, population-based epidemiologic data on mortality (age, sex, community vs. hospitalized deaths, seasonality, risk factors). These studies are difficult to do but important for targeting intervention strategies and may be practical at sites where comprehensive etiologic studies are not possible. A relatively large population could be studied by visiting villages (possibly monthly) and getting information about deaths the past month (verbal autopsy). Information on the presence of etiologic agents in the community could be obtained through specimens obtained in outpatient clinics (e.g., RSV, parainfluenza viruses, and influenza viruses). This information could be coupled with the descriptive mortality data and temporal associations between presence of agents in the community and increases in death rates could be used to get some information about the impact of certain agents on ARI deaths. An even more limited study would focus on the collection of descriptive data on mortality in an area where LRI mortality is high and autopsies are permitted, with specimens being sent to reference laboratories for pathogen identification.

4. Is the program run in an effective and cost-efficient manner compared to other international programs?

From the evidence provided in the material submitted by BOSTID and interviews with key officials and consultants, it appears that the program is being conducted with appropriate safeguards for cost efficiency and quality control. It is emphasized that the grants are relatively small for the research desired.

Are the funds managed effectively in individual projects?

The Panel did not review the management of funds in individual projects.

Do BOSTID staff monitor projects and provide appropriate follow-up on problems?

BOSTID staff appears to know its grantees very well, to be in constant touch with them, and to respond promptly to their requests for help.

5. Are these researchers receiving adequate assistance and support to enable them to produce reliable data?

There is clear evidence of effective transfer of technology to the project sites. Some investigators have been better able learn from workshops, manuals, consultants, etc., than others.

Are the following elements effective?

- Visits to grantees by consultants familiar with program goals and study designs
- Lab manuals in virology, bacteriology, and epidemiological design
- Workshops in virology, bacteriology, data management, and data analysis
- Coordination meetings for principal investigators and consultants
- Reference lab for rapid viral diagnosis, viral isolation, bacterial isolation, and antigen detection
- Final symposium for presentation of results.

Questions regarding these elements will be answered en bloc. The first has been addressed above with the suggestions that repeat visits for longer periods of time by the same consultant working "hands on" in the laboratory or with data management might be more effective, provided such consultants can be recruited. The investigators would not have made the progress they have without the manuals and workshops. Data from the reference laboratories were not provided. All investigators, with staff urging, are preparing for the final symposium, a true stimulus for data analysis.

6. Which research directions should be emphasized if the program is to continue? Some possibilities are:

Broad study of the pathogenesis of ARIs

More detailed identification of viruses and bacteria isolated in a few centers for purposes of vaccine development

Selection of three to five best study sites and continue more detailed, comprehensive, and demanding studies of etiology, pathogenesis, and risk factors for ARI.

The final possibility listed by this question received strong endorsement by the Panel for reasons previously mentioned, and emphasized as follows:

The ARI program has developed a unique network of scientific groups in developing countries which is addressing important issues concerning ARI in children. The major accomplishment has been effective transfer of epidemiologic and microbiologic technology to regions in which there are limited skilled personnel and laboratory facilities. Effective arrangements for meetings, networking and technical consultation have produced a core of mutually supportive, qualified people in developing countries. The investigators have been able to establish their units without depending on "mother" institutions in the U.S.A. The units must work under difficult field conditions in settings which do not place a high priority on research. The program has provided a source of funds and inspiration to investigators who would otherwise be intellectually starved. The focus on ARI is appropriate and, unless support is continued, a major opportunity to improve the scientific expertise in epidemiology, microbiology and control of ARI in developing countries will be lost. The Panel endorses selection of several of the best study sites for continuation of comprehensive studies.

Other suggestions in addition to those listed include:

Assessment of use of antimicrobial agents

Monitoring of development of bacterial resistance

Field trials for the efficacy of triage of children with pneumonia and immediate use of antibiotics (i.e., a test of WHO case management).

Studies of the malnutrition/infection complex

Relationship of vitamin A to ARI mortality

Association between otitis media and mortality

Efficacy trials of vaccines developed on basis of etiologic studies

VI. RECOMMENDATIONS

1. The Panel recommends that the ARI Program be continued with the comprehensive epidemiologic and microbiologic projects limited to several outstanding units which have been most effective and in which there has been effective collaboration among disciplines. Comprehensive projects are ones that combine both community surveillance and hospital studies.
2. As funds permit, other units should be continued or established for the purposes stated in V.3.
3. There is no need to add additional studies at this time--although investigator initiative and flexibility should be preserved--for the initial questions have yet to be answered. The proposed multi-disciplinary, comprehensive units still must learn to walk before they can run. It is enough to ask them to define well the epidemiology and etiology of acute respiratory infections and of ARI mortality in the developing world.
4. Wherever the ARI Program is based in the future, a support structure for the provision of technical assistance, equipment and reagents and a fiscal monitoring system similar to that developed by BOSTID should be maintained.
5. A standing committee of ARI experts should be established to advise this pioneering venture in technology transfer. At least one-third to one-half of the advisory committee members should have had experience in LDCs. This same committee could function as the group to review new proposals.
6. The Panel offers the following criteria to assist reviewers in evaluating and assigning priority to future comprehensive projects. Two ingredients are essential: a population appropriate for both community and hospital studies; the resources (facilities and skills) for epidemiologic, clinical and laboratory studies. These two ingredients are assigned equal weight in the suggested arbitrary scoring system.

A. Population	100
1. Accessibility	30
2. Stability	30
3. Frequency of LRI	20
4. Severity (C/F rate)	20

B.	Resources		100
1.	Laboratory Services		30
	Bacteriology	10	
	Virology	10	
	Pathology	10	
2.	Clinical Services		30
	Home visitors	10	
	Physicians	10	
	Radiology	10	
3.	Epidemiology support		20
4.	Data management		20

These suggested evaluation criteria should be modified in the light of the presentations at the October meeting. Criteria for smaller, simpler, more focused studies should be stated as proposals for such studies are developed.

- Funding should be appropriate to the scale of each project, and should include reimbursement of reference laboratories.

13

Panel for Evaluation of BOSTID ARI Program

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APPENDIX 2

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BOSTID RESEARCH PROGRAM ACUTE RESPIRATORY INFECTIONS IN CHILDREN PROGRAM EVALUATION TERMS OF REFERENCE

BACKGROUND

In 1981 the AID Office of the Science Advisor (SCI) awarded a grant to the Board on Science and Technology for International Development (BOSTID) of the National Research Council to carry out a program of research in developing countries. The grant included \$16.3 million to be awarded directly as subgrants to developing country institutions for research projects, and another \$7.7 million for grantee recruitment, proposal evaluation, networking, and administration, over 5 years (subsequently extended to 8 years).

The NRC created a Committee on Research Grants (CRG) to supervise the program, and the CRG selected six research areas for concentration, with the concurrence of SCI. One of the areas was Epidemiology and Etiology of Acute Respiratory Infections in Children (ARI), selected at the CRG meeting in December, 1982. The program was launched at a meeting in North Carolina in May, 1983 at which a group of experts from the U.S. and developing countries recommended that 1) the focus of the ARI program be to determine the role of viruses and bacteria in ARIs through both community- and hospital-based studies, and 2) all researchers should use a common protocol so the results on different populations would be comparable. The program announcement based on these recommendations is attached in Appendix I. The report of the North Carolina meeting was published in Pediatric Research (17:1023-1076, 1983).

The first grants were approved in August, 1983. Other proposals were considered in February, 1984. Several of them were from institutions with limited capability to conduct etiologic studies located in countries with high mortality from ARI. The CRG asked a panel of experts to advise on whether it would be feasible to conduct etiologic studies in countries with high mortality but limited scientific capacity, and whether the many obstacles could be overcome to produce reliable information on the pathogens causing severe disease. The advisory group met in May, 1984 under the chairmanship of CRG member Dr. Sam Asper. They concluded that research on the etiology of ARI was of the highest priority, and could be accomplished successfully if the grantees were offered intensive technical assistance in all aspects of the projects.

The present list of grantees is given in Appendix II. Among the supporting activities provided by BOSTID are:

- o Consultants provided by BOSTID assist with selection of equipment and supplies for grantees.
- o Reagents for rapid viral diagnosis by immunofluorescence are tested by Dr. Monica Grandien of the National Bacteriological Laboratories, Sweden.
- o Monoclonal reagents for viral diagnosis are prepared by Dr. Alan Kendal at the Centers for Disease Control, Atlanta.
- o Protocols for bacterial and viral diagnosis were developed at the first grantees' coordination meeting, June, 1984.
- o Two-week workshops to develop and implement virological and bacteriological protocols and procedures were held in Michigan and Maryland in May and June, 1985.
- o Manuals for diagnostic procedures for virology and bacteriology were prepared by experts and distributed to all grantees and prospective grantees.
- o Workshops on data management and data analysis were held in Thailand and College Park, Maryland in January, 1986 and June, 1987, respectively.
- o Grantees meet annually to discuss results and solve problems.
- o Grantees' biannual reports are reviewed by experts to flag problems requiring assistance.
- o Consultants in various disciplines visit all projects at least annually, and usually more frequently.
- o Reference laboratories review diagnoses of specific viruses and bacteria and do more detailed typing of bacteria.

As predicted by the Asper advisory group, this considerable assistance has enabled most projects to set up the appropriate laboratory procedures and solve the numerous difficulties inherent in such projects in developing countries. Most projects are producing reliable data. Over the next few months, the ARI researchers will analyze the very large data sets from virology and bacteriology laboratories, epidemiological surveillance and clinical evaluations. Each will be visited by an epidemiologist experienced in data management and familiar with the BOSTID program to prepare the data for presentation at an international symposium in October, 1988.

FUTURE OPTIONS

If no additional funding is available, the present BOSTID program will end in March 1990. No new grants will be awarded (including two approved in November 1987) due to severe budget cuts. No funds from the present program will be available for services to grantees after 1988. In 1988, a new research program called the Partnership for Development Research (PDR) will begin, in which BOSTID's role will be limited to evaluation of proposals and networking and monitoring of grants awarded by the office of the Science Advisor of AID. Under the PDR there will be insufficient funds available for the intensive procurement and technical assistance that have characterized the BOSTID ARI program and which the CRG considers essential for its success.

16

ARI grantees and others will present their etiologic and epidemiologic data at a symposium to be held at the NAS during October 24-26, 1988. A special session of that symposium will be dedicated to recommendations by grantees and other experts on future research directions. These recommendations are likely to include more specific etiologic studies to follow up the interesting and unexpected findings which are emerging from some projects, studies on pathogenesis of ARIs, and possible clinical trials.

There is no source of funds at present to support these further studies, and most of the research groups that have been assembled to carry out the BOSTID studies have no alternate resources to maintain their working capacity and continue the research on ARI. For BOSTID and AID there are three options:

1. Include ARI in the new Partnership for Development Research program, realizing that resources are not available to maintain the current level of support and intensive technical assistance;
2. Terminate the ARI program, because an effective program would consume a disproportionate share of the PDR budget;
3. Support the ARI program with funds from another source, such as the Office of Health.

EVALUATION

In order to select the best choice among the above options, an evaluation is proposed to determine whether the BOSTID ARI program is operating efficiently to achieve its objective of obtaining reliable information on etiology and epidemiology of ARIs.

The following general and specific questions will be addressed:

Is the BOSTID program addressing the key issues identified at the 1983 North Carolina meeting related to the etiology and epidemiology of ARI?

Are the goals of the program worthwhile and realistic?

Have staff and grantees made appropriate efforts to realize these goals?

Is the research carried out through the program sound, and does it show promise of producing results that will eventually help control ARIs in children?

Will BOSTID studies provide understanding of the relative roles of viruses and bacteria in ARI?

Is the epidemiologic design of the studies adequate to identify the appropriate risk factors for ARI?

Are the researchers and institutions involved in these studies appropriate?

Are there other institutions not presently part of the program which should be included?

Are there projects which should be restructured or not continued?

Is the program run in an effective and cost-efficient manner compared to other international programs?

Are the funds managed effectively in individual projects?
Do BOSTID staff monitor projects and provide appropriate followup on problems?

Are these researchers receiving adequate assistance and support to enable them to produce reliable data?

Are the following elements effective?

Visits to grantees by consultants familiar with program goals and study designs,
Lab manuals in virology, bacteriology, and epidemiological design,
Workshops in virology, bacteriology, data management, and data analysis,
Coordination meetings for principal investigators and consultants,
Reference labs for rapid viral diagnosis, viral isolation, bacterial isolation, and antigen detection,
Final symposium for presentation of results.

Which research directions should be emphasized if the program is to continue?

Some possibilities are:

Broad study of the pathogenesis of ARIs
More detailed identification of viruses and bacteria isolated in a few centers for purposes of vaccine development
Selection of three to five best study sites and continue more detailed, comprehensive, and demanding studies of etiology, pathogenesis, and risk factors for ARI.

The evaluation would be carried out by a panel of three experts. The chairman would be a recognized expert with no prior connection to the BOSTID ARI program. A second member would be familiar with the program, but would not recently have been an active participant. A third member would be selected by the AID Office of Health.

The panel will utilize the following mechanisms:

Review of BOSTID files, including annual reports of grantees, travel reports of consultants and staff, and reports of grantees' meetings and workshops.

Questionnaires sent to grantees and to selected consultants and reviewers (See list in appendix III).

Interview with individuals familiar with the program, including consultants and AID officials.

The panel will have its first meeting in mid-March to prepare the plan of work. It is anticipated that the evaluation will be completed by May 31, 1988. The cost of the evaluation will be approximately \$25,000, and will be borne by the BOSTID ARI program's networking funds.

18

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Announcement of Grants for Research on Diagnosis and Epidemiology of Acute Respiratory Infections in Children

The Committee on Research Grants, Board on Science and Technology for International Development (BOSTID), National Academy of Sciences, supports research in developing country institutions on selected scientific questions of wide applicability. The Committee proposes to fund a small number of projects that seek to elucidate the etiology and epidemiology of acute respiratory infections in children (ARI). These studies may be based on children requiring care for acute respiratory illness (e.g., hospital-based studies) or children selected to be representative of a defined population (community-based studies). In more developed countries, preference is given to community-based studies that contribute information on development of specific acute respiratory infections in different populations with different levels of health care. Proposals should describe any features in the social and ecological setting that may make the population particularly worthy of study. Proposals for innovative ARI research such as development of rapid diagnostic techniques are also encouraged.

Hospital- and community-based research should cover the following aspects:

- o identification of bacterial and viral respiratory pathogens
- o description of clinical and radiological features, treatment and outcome
- o identification of important risk factors

Where appropriate, research should also include assessment of the incidence, severity, and fatality rates associated with infections caused by specific pathogens.

These studies may lead to the development and testing of alternative methods of management and to evaluation of vaccines and other strategies for prevention.

Grantees participate in annual coordination meetings and collaborate in adoption of common procedures to facilitate collection of comparable data on different populations. Agreement has been reached by current grantees on the following:

- o procedures for viral diagnosis including choice of cell lines
- o procedures for bacterial diagnosis
- o procedures for rapid diagnosis of respiratory viruses and bacteria
- o basic information to be collected on factors such as social and medical background and clinical symptoms of participating children.

Procedures for diagnosis are described in detail in laboratory manuals prepared by grantees and other experts. Short term training in these procedures and epidemiologic methods is available.

Diagnostic reagents and other supplies not locally available are ordered by BOSTID staff. In some cases, reagents are provided from lots that have been tested for quality by a consulting laboratory.

Grant funds may be used for salaries of scientists and technicians, purchases of project-related equipment, research expenses, short-term training, and travel. Long-term training and purchase of vehicles should not be included. Appropriate safety procedures must be followed when working with pathogens.

Only institutions and public and private agencies in developing countries are eligible for grants. Institutions in middle income countries may participate if the proposal involves collaboration with other grantee institutions or is of general interest to developing countries. Collaborative work with scientists from industrialized countries is encouraged by the support of travel to grantee institutions for consultation and training in connection with funded projects. Most grants range from a total of about \$100,000 to \$200,000 for a two- to three-year period. Funds are provided by the Office of the Science Advisor, U.S. Agency for International Development.

For further information and proposal preparation guidelines, please write to Dr. Michael P. Greene, Associate Director, Board on Science and Technology for International Development at the letterhead address, giving a brief description of your area of interest, or call Dr. Judith Bale at (202) 334-2675.

ACUTE RESPIRATORY INFECTION

<u>NO./TITLE</u>	<u>INSTITUTION/COUNTRY</u>	<u>PRINCIPAL INVESTIGATOR</u>	<u>AMOUNT</u>	<u>PERIOD</u>
ARI-AR-1-84-29 Etiology of Lower ARI: Relation to Clinical Features and Environmental Variables	National Research Council (CONICET)/ University of Buenos Aires, Argentina	Mercedes Weissenbacher	\$144,700	5/8/84- 3/31/88
ARI-BD-1-84-43 Causes of Acute Lower Respiratory Tract Infections in Hospitalized Children	International Center for Diarrhoeal Disease Research, Bangladesh (ICDDR,B)	David Sack and Farida Huq	\$205,400	3/17/85- 3/16/88
ARI-BR-4-86-61 The Etiology and Risk Factors of Acute Respira- tory Infections in a Favela Population	Oswaldo Cruz Foundation, Brazil	Frits Sutmoller	\$233,900	4/11/86- 4/10/89
ARI-CO-4-86-57 An Etiologic, Epidemio- logic, and Clinical Study of Acute Respiratory Infections	Fundacion para La Educacion Superior (FES)/Universidad del Valle, Colombia	Isabella Borrero	\$190,000	3/19/86- 3/18/89
ARI-GT-5-84-30 Epidemiology and Etiology of ARI in a Low-Income Urban Population: Identification of Nutritional and Other Risk Factors	Institute of Nutrition of Central America and Panama (INCAP), Guatemala	Jose R. Cruz	\$330,000	3/27/84- 6/30/88
ARI-PH-11-88-92 Etiology of Childhood Acute Respiratory Infections: Data Analysis and Pathophysiologic Studies	Tropical Disease Research Foundation Inc., Philippines	Thelma Tupasi	\$40,000	11/12/87- 11/11/88
ARI-PK-2-85-44 Determination of the Etiology of Acute Respiratory Infections in Children Attending Outpatient Clinics	National Institute of Health, Islambad, Pakistan	Abdul Ghafoor	\$167,200	2/7/85- 12/31/88

ARI-SE-1-85-52 Quality Control of Diagnostic Reagents and Reference Laboratory Services for Grantees	National Bacteriology Laboratory, Sweden	Monica Grandien	\$136,500	4/30/85- 4/29/88
ARI-TH-8-85-51 Etiology and Development of Acute Respiratory Infections in an Urban Community and Hospital	Mahidol University Thailand	Subharee Suwanjutha	\$226,700	6/28/85- 6/27/88
ARI-UY-1-84-31 Identification of Etiology and Risk Factors of Child- hood ARI in the Community	Central Public Health Laboratory, Ministry of Public Health, Uruguay	Maria Hortal de Peluffo	\$151,500	8/8/84- 4/30/88
ARI-UY-2-88-104 The Etiology of Acute Respiratory Infections	Central Public Health Laboratory, Ministry of Public Health, Uruguay	Maria Hortal de Peluffo	\$120,600	2 years
<u>Grants completed:</u>				
ARI-CL-4-85-45 Development of the Inhibition of Idiotype- anti-Idiotype Interaction Assay for Rapid Identifi- cation of Pathogens Associated with ARI in Children	Institute of Nutrition and Food Technology (INTA), University of Chile	Pedro Potocnjak	\$105,500	3/13/85- 3/12/87
ARI-KE-6-84-41 Clinical and Familial Study of ARI in a Rural Area	University of Nairobi, Kenya	E.M. Wafula	\$150,300	8/3/84- 12/31/87
ARI-NG-1-84-38 Etiology of ARI in Low Income Urban Children: Hospital and Community Studies	University of Ibadan, Nigeria	C. O. Oyejide, W. I. Aderele	\$238,200	10/3/84- 10/2/87
ARI-PG-1-84-28 Viral and Bacterial Pathogens Responsible for ARI in Young Children	Papua New Guinea Institute of Medical Research	Michael Alpers	\$197,000	5/29/84- 9/30/87
ARI-PH-3-84-37 Etiology of Childhood Acute Respiratory Infections: Hospital and Community Based Studies	Research Institute for Tropical Medicine, Philippines	Thelma Tupasi	\$173,600	8/10/84- 6/30/87

Total. funds committed

\$2,811,100

BOSTID Research Program Volunteer Consultants and Reviewers

August 1986 - July 1987

The following is a list of contacts who have volunteered their time to advise BOSTID grantees during the one year period of August 1986 - July 1987. These include scientists who served as consultants to currently funded projects (consultants), who reviewed new proposals for funding (reviewers), and who presented papers or workshops at annual coordination meetings (meeting participants). Institutions that have hosted grantees are also listed.

CONSULTANTS

Dr. Stephen Berman

Department of General Pediatrics, University of Colorado Health Sciences Center, Denver, made pre-grant and interim visits to projects in Colombia and Peru, February 2-14, 1987.

Made consultant visits to ARI grantees at the Central Public Health Laboratory in Montevideo, Uruguay; the Oswaldo Cruz Foundation in Rio de Janeiro; and the University of Buenos Aires in Argentina from March 24 to April 4, 1987.

To New Delhi and Vellore, India; Dhaka, Bangladesh; Rangoon, Burma; Chiang Mai and Bangkok, Thailand for pre-grant and consultant visits: July 2, July 14-15, July 18-28, 1987.

Dr. Patricia Charache

Director of Microbiology Laboratories, Johns Hopkins Hospital, made consultant visits to ARI grantees in Dhaka, Islamabad, and Bangkok from November 16 to December 2, 1986.

Consulted with grantees at the University of Buenos Aires, Argentina, Oswaldo Cruz Foundation in Rio de Janeiro, and the Central Public Health Laboratory in Montevideo, Uruguay, from April 24-May 2, 1987.

Made consultant visits to the International Centre for Diarrhoeal Disease Research in Dhaka, Bangladesh, and the University of Nairobi in Kenya from July 17 to 30, 1987.

23

Dr. Alan Kendal Chief, Influenza Unit, Centers for Disease Control, Atlanta made consultant visits to ARI projects at University of Nairobi, Kenya, and University of Ibadan, Nigeria October 14-26, 1986.

Dr. Frank Loda Department of Pediatrics, University of North Carolina, Chapel Hill, together with Dr. Floyd Denny were visited by grantee Dr. E. M. Wafula from the University of Nairobi, Kenya from December 15-18, 1986.

Dr. Kenneth McIntosh Boston Children's Hospital, was visited by grantee Dr. Subhatee Suwanjutha of Ramathibodi Hospital, Bangkok, from December 15-16, 1986.

With Boston Children's Hospital virology lab staff trained Zalia P. de Andrade of the ARI project at the Oswaldo Cruz Foundation in Rio de Janeiro from January 17 to February 15, 1987.

Dr. Harris Pastides Division of Public Health, University of Massachusetts, Amherst, made consultant visits to ARI projects at the University of Nairobi, Kenya, and the University of Ibadan, Nigeria, from September 29 to October 12, 1986.

Dr. Patricia Reichelderfer Advanced Laboratory Technology, Las Vegas, Nevada, visited the University of Ibadan, Nigeria, from May 9 to 22, 1987 to assist with laboratory procedures.

Dr. Beatrice Selwyn University of Texas School of Public Health, Houston made a consultant visit to ARI grantee Dr. Jose Cruz in Guatemala August 22-27, 1986.

Dr. Gordon Smith Department of Health Policy and Management, Johns Hopkins University, made an interim consultant visit to Dr. Pedro Potocnjak at the University of Chile in Santiago, October 3, 1986.

24

ARI Reference Laboratories

Dr. Patricia Charache, Microbiology Laboratories, Johns Hopkins Hospital, Baltimore, MD: bacterial identification (except for H. influenzae) and quality control checking

+ 10 specimens at 1 hour each

Dr. Alan Kendal, Influenza Unit, Centers for Disease Control, Atlanta: identification of influenza viruses and distribution of reagents

+ 20 specimens at 1 hour each

Influenza reagents distributed at \$100 per kit to grantees, \$2,400 plus international air freight

Dr. Kenneth McIntosh, Boston Children's Hospital: identification of viral isolates, specifically respiratory syncytial virus (RSV)

+ 50 specimens at 1 hour each

Dr. George Ray, Professor of Pathology, University of Arizona College of Medicine, Tucson, AZ: viral identification (Nigeria)

55 specimens at 1 hour each

Dr. Virginia Anderson, Armed Forces Institute of Pathology, Washington D.C.: autopsy specimens

Dr. Monica Grandien, National Bacteriological Laboratory, Stockholm, Sweden: quality control for viral diagnosis for fluorescence assay

Dr. Dan Granoff, St. Louis Children's Hospital, Missouri: identification of H. influenzae and quality control

REVIEWERS

Dr. Stephen Berman	University of Colorado (ARI-40, 41, 42, 44, 46)
Dr. Floyd Denny	University of North Carolina (ARI-41)
Dr. Benjamin Ferris	Harvard School of Public Health (ARI-41, 44)
Dr. Dan Granoff	St. Louis Children's Hospital (ARI-42)
Dr. Richard E. Honicky	Michigan State University (ARI-41, 44)
Dr. Frank Loda	University of North Carolina (ARI-40, 41, 44)
Dr. Kenneth McIntosh	Boston Children's Hospital (ARI-42)
Dr. Frank Speizer	Channing Laboratories, Boston (ARI-41)

MEETING PARTICIPANTS

Acute Respiratory Infections

Meeting on diagnosis of respiratory bacterial pathogens

Washington, DC

October 7, 1986

Dr. Robert Austrian	Dept of Research Medicine, University of Pennsylvania School of Medicine, Philadelphia
Dr. Claire V. Broome	Division of Bacterial Diseases, CDC, Atlanta
Dr. Patricia Charache	Microbiology Laboratories, Johns Hopkins Hospital
Dr. Floyd Denny	Dept of Pediatrics, University of North Carolina
Dr. Dan Granoff	St. Louis Children's Hospital, Missouri
Ms. Carol Himmelreich	St. Louis Children's Hospital, Missouri
Dr. Brian Lauer	Dept of Pediatrics, University of Colorado, Denver
Dr. Maija Leinonen	National Public Health Institute, Helsinki, Finland
Dr. Francisco Pinheiro	Pan American Health Organization, Washington DC
Dr. John A. Washington	Dept of Microbiology, Cleveland Clinic Foundation

Acute Respiratory Infections

Meeting on the pathogenesis of ARI

Washington, DC

December 4-5, 1986

Dr. Stephen Berman	Dept of Pediatrics, University of Colorado, Denver
Dr. John Brooks	University of Rochester Medical Center, NY
Dr. Floyd Denny	Dept of Pediatrics, University of North Carolina
Dr. Richard Johnston	Children's Hospital, Philadelphia
Dr. Michael Katz	Columbia University School of Medicine, NY
Dr. Gerald T. Keusch	Tufts University School of Medicine, Boston
Dr. Kenneth McIntosh	Boston Children's Hospital
Dr. Richard Stiehm	UCLA School of Medicine, CA

Acute Respiratory Infections

Coordination Meeting

Washington D.C.

December 8-12, 1986

Dr. Harry Campbell	Medical Research Council, Fajara, The Gambia
Dr. Patricia Charache	Microbiology Laboratories, Johns Hopkins Hospital
Dr. Ian Forgie	Medical Research Council, Fajara, The Gambia
Dr. Monica Grandien	National Bacteriological Laboratory, Stockholm
Dr. Dan Granoff	St. Louis Children's Hospital, Missouri
Dr. Alan Kendal	Influenza Unit, CDC, Atlanta, GA
Dr. Fabio Luelmo	Pan American Health Organization, Washington, DC
Dr. Kenneth McIntosh	Boston Children's Hospital
Dr. Arnold Monto	World Health Organization, Geneva
Dr. Harris Pastides	University of Massachusetts, Amherst, MA
Dr. Beatrice Selwyn	School of Public Health, University of Texas, Houston

Acute Respiratory Infections
Data Analysis Workshop and Coordination Meeting
Washington, D.C.
June 8-19, 1987

Dr. Virginia Anderson	Armed Forces Institute of Pathology
Dr. Stephen Berman	University of Colorado, Denver
Dr. Patricia Charache	Johns Hopkins University
Dr. George Curlin	National Institutes of Health
Dr. Dan Granoff	St. Louis Children's Hospital, St. Louis, MO.
Dr. Harris Pastides	University of Massachusetts, Amherst, MA
Dr. Beatrice Selwyn	School of Public Health, University of Texas, Houston

Chronology of the BOSTID ARI Program

- December 1982 ARI selected as sixth and final research project area
- May 18-20, 1983 ARI Organizational Meeting, North Carolina, to define the major objectives of BOSTID ARI program. (Report enclosed). This was held in conjunction with the workshop on Acute Respiratory Diseases among Children of the World (Wallace Clyde and Floyd Denny). (Publication enclosed).
- 1984 on Recruitment of potential ARI grantees by telephone, letter, and visits. Approval of proposals was at meetings of Committee on Research Grants, which were held two to three times annually.
- May 4, 1984 BOSTID Advisory Meeting chaired by Dr. Sam Asper to evaluate the feasibility of the ARI program. (Report enclosed).
- June 26-29, 1984 First ARI Coordination Meeting of principal investigators and consultants to coordinate the methodology of projects to ensure that a core of comparable data would be collected. (Report enclosed shows agreement on viruses and bacteria to be investigated, cell lines, rapid tests, and media. It also shows the minimal set of epidemiological data to be included in each project.)
- January 7-8, 1985 Meeting of experts in epidemiology/data management and analysis to assist in epidemiological design of projects and selection of appropriate microcomputers and software.
- May 13-25, 1985 Workshop on virology protocols for the lead virologist for each project using the draft manual on virology. The workshop was directed by Dr. John Maassab, University of Michigan. (Virology manual enclosed.)
- June 3-14, 1985 Workshop on bacteriology protocols for the lead bacteriologist for each project using the draft manual on bacteriology, Dr. Patricia Charache, Johns Hopkins University. (Bacteriology manual enclosed.)
- July 22-26, 1985 Second ARI Coordination Meeting of principal investigators and consultants of BOSTID ARI projects. (Report enclosed shows the first set of tables to be developed by projects. Principal investigators were briefed on decisions made by virologists and bacteriologists at the workshops. Problems in virology and bacteriology were discussed.)
- January 6-17, 1986 Workshop on ARI Data Management for data manager from each ARI team. This Workshop was led by Drs. Harris Pastides and Beatrice Selwyn. (The Workshop manuals can be provided but are bulky and do not stand alone without the Workshop.)

- December 4-5, 1986 Workshop on Pathogenesis of ARIs.
- December 8-12, 1986 Third ARI Coordination Meeting of principal investigators and consultants. (Report enclosed of key decisions made at that meeting).
- June 8-12, 1987 Workshop on ARI Data Analysis held at Microcomputer Laboratory, University of Maryland. This workshop was led by Dr. Harris Pastides and Dr. Beatrice Selwyn. Participants were the principal investigator and data analyst from each project.
- June 15-19, 1987 Fourth ARI Coordination Meeting of principal investigators and consultants.
- o Review of laboratory and epidemiological problems
 - o Discussion of samples to be sent to BOSTID reference laboratories

29

NATIONAL RESEARCH COUNCIL

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May 12-25, 1985
University of Michigan
Ann Arbor

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Dr. S. A. Schwartz
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3

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BACTERIOLOGY WORKSHOP
June 3-14, 1985
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33

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Acute Respiratory Infections Project
Workshop on Microcomputer/Data ManagementJanuary 6-17, 1986
Asian Institute of Technology
Bangkok, Thailand

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30

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BOSTID Research Program
Acute Respiratory Infection Project
Data Analysis Workshop and Fourth Coordination Meeting
Washington, D.C.
June 8-19, 1987

PARTICIPANTS

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31

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38

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ATTACHMENT

SCHEDULE OF CONSULTANT VISITS
TO ARI PROJECTS

ARGENTINA ARI-AR-1-84-29	DATE OF VISIT	REPORT RECEIVED
J. R. Bale (interim)	12/84	
P. Charache (Clin. & Lab.)	9/85	
H. Pastides (Data Management)	5/86	5/86
S. Berman (Clin. & Lab.)	3/87	4/87
P. Charache (Clin. & Lab.)	4/87	4/87
B. Selwyn (Data Management & Epidemiology)	3/88	3/88
BANGLADESH ARI-BD-1-84-43		
K. McIntosh (Clin. & Lab.)	1/85	1/85
M. Steinhoff (Clin. & Lab.)	12/85	12/85
G. Smith (Clin. & Lab. & Data Management)	5/86	5/86
L. Pierik (Virology Lab.)	6-7/86	7/86
P. Charache (Clin. & Lab.)	11/86	3/87
P. Charache (Clin. & Lab.)	7/87	
L. Pierik (Virology Lab.)	11/87	11/87
H. Pastides (Epidemiol. & Data Management)	3/88	3/88
S. Berman (Clin. & Lab.)	7/87	
BRAZIL ARI-BR-4-86-61		
H. Pastides (Epidemiology & Data Management)	5/86	5/86
J. Bale (Administrative; interim)	8/86	8/86
S. Berman (Clin. & Lab.)	3/87	4/87
P. Charache (Clin. & Lab.)	4/87	7/87
Antik (Bacteriology Lab.)	10/87	12/87
COLOMBIA ARI-CO-4-86-57		
P. Charache (Laboratory)	9/85	
S. Berman & J. Bale (interim)	2/87	3/87
B. Selwyn (Data Management & Epidemiology)	3/88	3/88

GUATEMALA ARI-GT-5-84-30	DATE OF VISIT	REPORT RECEIVED
Dr. Cruz to US for training	4/84	
Dr. Cruz to US for coord. mtg.	6/84	
Dr. Cruz to US ARI mtgs.	12/84	
J. Valentine - Bacti. Lab.	7/86	9/86
B. Selwyn (Data Management & Epidemiology)	8/86	9/86
P. Charache (Clin. & Lab.)	12/87	2/88
B. Selwyn (Data Management & Epidemiology)	3/88	3/88
KENYA ARI-KE-6-84-41		
A. Monto (Clin. & Virol. Lab.)	8/85	11/85
F. Loda (Clin. & Lab.)	2/86	3/86
H. Pastides (Data Management)	10/86	10/86
A. Kendal (Virology Lab.)	10/86	10/86
F. Denny (Data Management & Virology Lab.)	3/87	4/87
P. Charache (Lab.)	7/87	9/87
M. Forman (Virology Lab.)	10/87	12/87
H. Pastides (Data Management)	3/88	3/88
NIGERIA ARI-NG-1-84-38		
N. Oyejide to the U.S.	Jan. 5-10/84	
P. Charache (interim)	12/85	12/85
H. Pastides (Data Management)	9/86	10/86
A. Kendal (Virology Lab.)	10/86	10/86
P. Reichelderfer (Bacteriol. Lab. & Verology Lab.)	5/87	6/87
PAKISTAN ARI-PK-2-85-44		
K. McIntosh (Clin. & Lab.)	1/85	1/85
P. Charache (Clin. & Lab.)	2/86	2/86
G. Smith (interim)	5/86	5/86
P. Charache (Clin. & Lab.)	12/86	2/87
G. Weinberg (Bacti. Lab.)	3/88	3/88
H. Pastides (Data Management)	3/88	3/88

41

PAPUA NEW GUINEA
ARI-PG-1-84-28

	DATE OF VISIT	REPORT RECEIVED
A. Monto (Epidemiology)	8/84	9/84
P. Charache (Lab.)	1/86	1/86

PHILIPPINES
ARI-PH-3-84-37

A. Monto (Epidemiology)	7/84	8/84
de Leon to US for training	12/84	1/85
Torres to Finland & Sweden for training	11/84	1/85
P. Charache (Lab.)	1/86	2/86

THAILAND
ARI-TH-8-85-51

K. McIntosh (Clin. & Lab.)	1/85	2/85
M. Grandien (Virology Lab.)	11/85	1/86
D. Granoff (Bacti. Lab.)	6/86	8/86
P. Charache (Clin. & Lab.)	11/86	3/87

URUGUAY
ARI-UY-1-84-31

Schiaparelli to Rio	Sept. & Oct. 1984	
J. Bale (Admin. interim)	12/84	
P. Charache (Clin. & Lab.)	9/85	
H. Pastides (Data Management & Epidemiology)	5/86	5/86
S. Berman (Clin. & Lab.)	3/87	4/87
P. Charache (Clin. & Lab.)	4/87	5/87
B. Selwyn (Data Management & Epidemiology)	3/88	3/88

42

Grantees in BOSTID ARI Program

<u>Grantee COUNTRY</u>	<u>Grant Duration (years)</u>	<u>Hospital Study (children)</u>	<u>Community Study (children)</u>
Jose Cruz GUATEMALA	3 2	--- 430	500 ---
Isabella Borrero COLOMBIA	3 1	--- 600	300 ---
Frits Sutmoller BRAZIL	3	600	600
Maria Hortal de Peluffo URUGUAY	3	400	200
Mercedes Weissenbacher ARGENTINA	3.5	800	---
W. Aderele C. Oyejide NIGERIA	3	100 ---	--- 400
E. M. Wafula KENYA	3	---	250
Abdul Ghafoor PAKISTAN	3	800	---
Mahbubur Rahman Farida Huq BANGLADESH	3	500	---
Subharee Suwanjutha THAILAND	3	500	480
Thelma Tupasi PHILIPPINES	3	250	600 (families)
Michael Alpers PAPUA NEW GUINEA	3	250	130

43

TO: Panel for Evaluation of BOSTID ARI Program

1. Grantee Projects performing Autopsy

The projects listed below have mentioned in their grant proposals post-mortem examination as "biopsy," "tissue examination," "needle aspirate" of lung tissue or "autopsy." To date, we do not have access to information on autopsy results.

<u>Autopsy of post-mortem examination</u>	<u>post-mortem needle biopsy</u>
Bangladesh	Argentina
Brazil	Kenya
Nigeria	Thailand
Philippines	
Thailand	

2. Training of grantee personnel in other laboratories:
(Does not include outside BOSTID--sponsored workshops)

Bangladesh	Dr. Mahmudul Huq to Boston Children's Hospital and Johns Hopkins for virology training (6 weeks) 9-11/85.
Brazil	Ms. Zalia de Andrade to Boston Children's Hospital for virology training 1/17-2/15/87.
Guatemala	Dr. Jose Cruz to University of Arizona for virology training 4/84.
Philippines	Ms. Lilian de Leon 11/27-12/22/87 to St. Louis Children's Hospital and CDC for bacteriology training. Chlotide Tomes to University of Tuku, Helsinki, Finland and to National Bacteriology Laboratory, Stockholm, Sweden 11/2-12/15/84 for virology training.
Uruguay	Mr. Hector Chiparelli to Fundacao Oswaldo Cruz, Rio de Janeiro Brazil for virology training.

3. Specimens to BOSTID reference Labs:

Stockholm, Sweeden; National Bacteriology Laboratory:
Immunofluorescence slides for rapid viral diagnosis of respiratory viruses. Dr. Monica Grandien.
1984--received 4 specimens from one grantee.
1986--received 302 specimens from nine grantees.
1987--received 224 specimens from eight grantees.
1988--received 525 specimens from four grantees.
Total = 1,055 specimens

44

St. Louis Children's Hospital; St. Louis, Missouri: blood and throat isolates; urine for counter-current immunoelectrophoresis for bacteriology identification. Dr. Dan Granoff.

1986 - 1987	692 isolates and urine specimens received from 10 grantees
1988 -	915 isolates and urine specimens received from 12 grantees
Total	1,607 specimens.

Other specimens include 737 virology specimens as naso-pharyngeal aspirates, tissue culture supernatant, paired sera have been or will be forwarded to:

Dr. Pat Charache
Johns Hopkins Medical Center
Adenovirus, CMV
Enteroviruses, unknown

Dr. Ken McIntosh
Boston Children's Hospital
RSV, Parainfluenza

Dr. Alan Kendall
CDC, Influenza Branch
Influenza A & B

45

Project Review Data Collection Sheet

Name: _____ Date: _____
 Annual Report Date: _____ to _____

Patient Data

Community	# Expected	# Enrolled
Families	_____	_____
Children	_____	_____
URIs	_____	_____
IRIs (total)	_____	_____
IRIs (hospitalized)	_____	_____
IRIs (deaths)	_____	_____
Hospital		
IRIs	_____	_____
Deaths	_____	_____
Measles	_____	_____

Impression of patient enrollment: Good Adequate Poor

Virus Laboratory Data

Tissue Culture cell lines used/dates: _____

Rapid diagnostic tests used/dates: _____

Test	Time period	#pos/#tested
Tissue culture	_____	_____
RSV	_____	_____
Influenza virus	_____	_____
Total	_____	_____
IFA		
RSV	_____	_____
Influenza virus	_____	_____
Other	_____	_____
Total	_____	_____

Impression of virus diagnostics: Good Adequate Poor

Bacteriology Laboratory Data

Test	Time period	#pos/#tested
Respiratory H. Flu	_____	_____
Respiratory S. Pne	_____	_____
Blood H. Flu	_____	_____
Blood S. Pne	_____	_____

Impression of bacteriology lab: Good Adequate Poor

Project Review Data Collection Sheet -2-

Project Name: _____
Reviewers Name: _____ Date Review: _____

Site Visit No. _____
Date: _____ Evaluator: _____
Impression of patient enrollment: Good Adequate Poor
Impression of virus diagnostics: Good Adequate Poor
Impression of bacteriology lab: Good Adequate Poor
Comments: _____

Site Visit No. _____
Date: _____ Evaluator: _____
Impression of patient enrollment: Good Adequate Poor
Impression of virus diagnostics: Good Adequate Poor
Impression of bacteriology lab: Good Adequate Poor
Comments: _____

Site Visit No. _____
Date: _____ Evaluator: _____
Impression of patient enrollment: Good Adequate Poor
Impression of virus diagnostics: Good Adequate Poor
Impression of bacteriology lab: Good Adequate Poor
Comments: _____

Site Visit No. _____
Date: _____ Evaluator: _____
Impression of patient enrollment: Good Adequate Poor
Impression of virus diagnostics: Good Adequate Poor
Impression of bacteriology lab: Good Adequate Poor
Comments: _____

Site Visit No. _____
Date: _____ Evaluator: _____
Impression of patient enrollment: Good Adequate Poor
Impression of virus diagnostics: Good Adequate Poor
Impression of bacteriology lab: Good Adequate Poor
Comments: _____

47