The Toxicology Information Outreach Panel was established by the National Library of Medicine (NLM) in the summer of 1991 as part of NLM's effort to improve access to biomedical information by Historically Black Colleges and Universities (HBCUs). The panel is composed of representatives from institutions with memberships in the Association for Minority Health Professions Schools (AMHPS), the National Association for Equal Opportunity in Higher Education (NAFEO), and the Oak Ridge Associated Universities (ORAU). In addition, representatives from the training areas of three government agencies and two consultants are members of the panel. The first panel meeting was held August 15 - 16, 1991 at the National Library of Medicine, at which time the panel was charged with developing strategies to strengthen the capacity of HBCUs to use the toxicological, environmental and occupational health resources developed by NLM. Several recommendations were made and strategies suggested.

NLM works with representative institutions of the nation's HBCUs to establish an Outreach pilot training program using hardware and software provided to the institutions by NLM. Nine institutions were selected to participate in the project. The appropriate hardware and software materials were sent to the HBCUs beginning in October, 1991. All hardware was installed and software became operational by January of 1992. The nine institutions
have been using these resources with faculty, researchers, and students.

The second panel meeting, held at NLM on April 6, 1992, provided an opportunity for the HBCU representatives to report on their experiences in implementing the Outreach Pilot Project involving training and utilization of NLM's toxicology-related databases, and to share ideas about how to most effectively conduct the project at their respective home institutions. Additionally, the panel meeting provided the opportunity for the members to learn about the NLM project to introduce NLM databases into the Lower Mississippi Delta region and the Outreach Training initiatives of the Agency for Toxic Substances and Disease Registry. The evaluation plans and an update of the TOXLEARN demonstration materials were also provided.

Meeting Objectives
Dr. Bailus Walker, Jr., panel chairman, summarized the meeting objectives as follows:

1. To provide the panel members and NLM staff with a firm handle on what the HBCU experiences have been to date with the Outreach Pilot.
2. To demonstrate that substantive results have been achieved at the participating institutions.

Introductory Remarks
Mr. Kent Smith, Deputy Director, NLM, welcomed the members of the Toxicology Information Outreach Panel and expressed appreciation on behalf of the Library for their contributions to this worthwhile endeavor. He then proceeded to provide an overview of the totality of Outreach activities in which the Library is involved. Mr. Smith concluded his remarks by stating that Congressman Stokes, at the recent appropriations hearings, was very pleased to hear about this project and requested that the names of the involved institutions and NLM project directors appear in the published hearings record. Mr. Smith felt that this action was indicative of the importance of the HBCU Toxicology Information Outreach Project.

Meeting Topics
The Lower Mississippi Delta Project
Dr. Charles Walker, panel advisor and director of the Lower Mississippi Delta Project at NLM, provided statistics on the health care delivery systems in the Lower Mississippi Delta region. The severe shortage of physicians and other health care providers in the region has prompted NLM to introduce its databases to health professionals in the region in order to maximize their effectiveness. Several suggestions to improve the dissemination of materials (such as involving the Centers for Disease Control (CDC), Black churches, and other organizations), were provided to Dr. Walter by panel members.

ATSDR Outreach Training
Dr. Max Lum, Director of the Division of Health Education for the Agency for Toxic Substances and Disease Registry (ATSDR), reported on the progress of ATSDR's outreach training. ATSDR has agreed to assist the NLM Toxicology Information Outreach Pilot Project for HBCUs by supplying funding for additional HBCUs to receive training in the use of NLM's databases. Dr. Lum has received from Dr. Melvin Spann recommendations for 16 new HBCUs to be considered for training. Presently, this training is scheduled to be held at the Oak Ridge Associated Universities in July, 1992.

Dr. Lum also provided information concerning ATSDR and Poison Control Centers in reference to the Alliance against Childhood Lead Poison (ACLP). In closing, he restated ATSDR's interest in the HBCU project and how pleased ATSDR was to be associated with this effort.

TOXLEARN Demonstration
One of the key components of the NLM databases is the ongoing development and implementation of new hardware and software elements. Ms. Miriam Perkins, Special Assistant for Education, of the Biomedical
Information Services Branch of 515, presented a demonstration of some of the NLM computerized training resources. She discussed the repackaging of the microcomputer-based courseware DOS versions of CHEMLEARN, TOXLEARN, MEDITUTOR, and ELHILL LEARN under TOOLBOOK; utilization of the graphical user interface provided by the Microsoft Windows environment; incorporation of full color graphics and audio; and the use of small subsets of NLM databases for more realistic simulated searches. Using full color graphics and audio, Ms. Perkins demonstrated the new system features. Panel members were told that the estimated completion date for the Windows versions of TOXLEARN and MEDITUTOR is June 1992, CHEMLEARN's projected completion date is August 1992, and ELHILL LEARN's projected completion date is October 1992. The HBCUs can also expect the new DOS versions of TOXLEARN and MEDITUTOR to be available some time during April 1992. In closing, Ms. Perkins reminded the panel members that if they had any questions or problems they should feel free to contact her and she would assist them.

HBCU Update
The remainder of the panel meeting was devoted to reports and discussions of the status of the project at the pilot HBCUs. Eight of the nine schools were represented at the meeting. (The representative from the Morehouse School of Medicine was unable to attend the meeting, but submitted a written report of project activities.) Dr. Spann introduced this section of the meeting by announcing that all but one of the PC workstations had been delivered to the participating HBCUs by October 1991. The last institution to join the project, Howard University, had its workstation delivered in January 1992. All institutions have had representatives trained in the use of the NLM resources at the Oak Ridge Associated Universities (ORAU), and most have received the second-level training to allow those trained to train others. The following is a summary of the report of each HBCU concerning the current status of the project.

Howard University
Washington, DC.
Dr. Robert Taylor
The workstation at Howard is located in the pharmacology department in an existing computer facility. This location was selected because of its easy access to faculty and students. A new facility is being developed, and two areas will be dedicated to this project. Five persons received the introductory training at NLM in early January. Dr. Robert Copeland also received the advanced training at ORAU and will serve as internal trainer for other Howard faculty and students. A three-day training session has been conducted at Howard, involving primarily faculty and researchers. This training is done in a classroom environment with twelve workstations. The major users of the workstation are currently faculty and students. Additionally, a seminar was given on the program -- approximately forty persons attended. The institution has bought the reference manager computer program, and faculty can utilize the software at their homes via modem. Concerning plans for the future, Dr. Taylor is developing a course on medical informatics to be introduced in either the senior or sophomore year at the Howard Medical School. Additional future plans include:

- Proposing the introduction of the medical information databases into hospitals for use by residents.
- Conducting two half-day workshops on toxicology databases at the annual meeting of the National Medical Association.
- Developing editorial position papers for publication in the Journal of the National Medical Association on the impact of toxic chemicals on drug response.
- Conducting a conference at Howard, sponsored by the Food and Drug Administration, to discuss the issue of drug use in the elderly. Staff from NLM would be involved in this activity.

According to Dr. Taylor, the primary objectives of the Howard project are:

- to develop model systems for innovative ways to use the NLM databases, to develop strategies for lifelong learning and self-instruction in database usage.
Texas Southern University  
Houston, TX  
Dr. Ted Bates  
The workstation at Texas Southern is located in the reading room of the College of Pharmacy. The institution is concentrating its efforts on the databases that faculty would find most useful. Dr. Bates received the training at Oak Ridge, and found it to be excellent. Mrs. Norman Bean, the head librarian, is also involved in the project. Currently all undergraduates at Texas Southern have a required course on drug evaluation. Efforts are underway to develop curriculum materials for use with this group of students. Additional future plans include:

- training all of the Pharmacology Department faculty members in the use of the resources.
- training the faculty of the other science departments in the use of the resources.
- introducing the materials into the neighboring health care community.

Local evaluation materials in use include a short form that users fill out to provide information on who uses the system.

Xavier University  
New Orleans, LA  
Dr. Ann Barbre  
The workstation at Xavier is located in a reference room of the university library that is both visible and accessible. Additional sites at which the software is being used are: The Drug Information Center located in downtown New Orleans and affiliated with Tulane University, and the College of Pharmacy library. These locations were selected because of their easy access to potential users. Many of the city health professionals have used the software at the Drug Information Center. Three persons have received both levels of the training at Oak Ridge. One seminar on the use of the materials has been scheduled for April 1992, but most training is done on an individualized basis. The major users of the workstation are currently faculty and students. Students in both the Professional Experience course and the Drug Literature Evaluation course have had an exercise to complete using the NLM materials, and students in the EE Just, MBRS, and MARC programs use the information as part of their research activities. In the future, Dr. Barbre will be planning activities to get a larger number of the faculty members to use the resources. Additional future plans include:

- Consultations with the director of the summer science academies about having the high school participants in these programs complete some exercises with the system.
- Consideration of the implementation of a required seminar on medical informatics to be offered to students in the Pharm. D. program.

Local evaluation materials in use include a short form that users fill out to provide information about users of the system.

Tuskegee University School of Veterinary Medicine  
Tuskegee, AL  
Dr. James Webster  
The workstation at Tuskegee is located in the library of the School of Veterinary Medicine. This location was selected because of its easy access to faculty, students, and researchers. Three persons received the training at Oak Ridge, and they have in turn developed a training manual for students to use when utilizing the workstation. No formal workshops have been conducted at Tuskegee to date -- these usually occur in June and July. There are plans to schedule a workshop during this period. Although faculty have been slow to use the workstation, it is anticipated that this will change after the summer training workshop. The major users of the workstation are
currently students; student to student training has worked very well. The materials have been formally introduced into a General Chemistry course, and curriculum development activities include plans to include a training session in the Introduction to Veterinary Medicine course in September. Concerning plans for the future, Tuskegee is considering techniques that would allow users of Macintosh systems to utilize the databases. Additional future plans include training high school teachers at Tuskegee High School during the summer of 1992 to utilize the databases. Their students often perform summer research at Tuskegee, and access to the databases would facilitate the completion of their research activities.

Florida A & M University
Tallahassee, FL
Mrs. Pauline Hicks

The workstation at Florida A & M is located near the reference desk in the Pharmacy Library reading room. This location was selected because of its easy access to students, and its close proximity to the library team. Flyers are circulated to announce the availability of the system, and potential users are encouraged to participate in a short training session in the use of the materials. Additionally, a newsletter is being published by the College of Pharmacy which includes information on the NLM Project. Only one person has received both levels of the training at Oak Ridge. Plans are underway to have more people trained. After more library staff are trained in the use of the system, a seminar or workshop will be implemented to train as many faculty members as possible. Training for students will follow. The major users of the workstation are currently pharmacy faculty and students. The materials have been used in the Advanced Toxicology course by students who are conducting research, and further integration into the curriculum will occur in the Drug Literature Evaluation course. Concerning plans for the future, Florida A & M is looking to establish a pilot program in a neighboring city. Currently they are considering working with local pharmacists and physicians in Gretna County to introduce use of the databases as an aid in their practices.

University of Arkansas at Pine Bluff
Pine Bluff, AK
Mr. Edward Fontennette

The workstation at UAPB is located in the library. This location was selected because of its easy access to faculty and students and its hours of accessibility (It is open until midnight.) Professors have access to the databases from their offices and laboratories. The Agricultural Extension program will have access in the future. Ten to twelve faculty members have had specific training in the use of the resources. Most of the student training has been on a one-on-one basis. There will be a formal workshop presented on the use of the equipment given by Dr. Maurice Knuckles of Meharry in April. There are currently no statistics on general usage of the databases. The materials are currently being used in a course on Nutritional Information and Biotechnology, and may be incorporated into other courses later. A Nursing Research course will contain a toxicology component, as will a course in agriculture and a pre-med course in biology. Future plans include increasing outreach efforts, which currently involve three physicians and one pharmacist. According to Mr. Fontennette, the primary objectives of the UAFB project are:

- Enhancing research
- Supporting area physicians
- Sustaining accreditation

Meharry Medical College
Nashville, TN
Dr. Maurice Knuckles

The workstation at Meharry is located in the Department of Family and Preventive Medicine. This location was selected because of its easy access to graduate students. This also allows for a good interface between the medical sciences and the basic sciences. One staff member has received both phases of the training provided at ORAU, and a second person has completed the first phase. Although no formal training has been provided at Meharry for faculty and staff as of yet, students in environmental sciences and toxicology received six hours of
training last semester. The students were required to use the databases as part of their course assignments. Some faculty members have requested that searches be done for them, but the project emphasis is on training them to perform searches themselves. The major users of the workstation currently are students. According to Dr. Knuckles, students have taken to it and really, really like it. "The Ph.D. students especially find it useful. Concerning plans for the future, Dr. Knuckles reported developing a half-day seminar for the Meharry alumni who return to campus during graduation activities. Plans are currently underway to train eight to ten students in Environmental Health and Toxicology. According to Dr. Knuckles, the primary objectives of the Meharry project are:

- To train the reference librarians in the use of the system.
- To get the medical and dental students involved in the use of the databases.
- To provide training and opportunities for faculty and staff.

In response to a question, Dr. Knuckles stated that plans to involve Fisk and Tennessee State University in the Project are as yet undetermined.

King Drew Medical Center
Los Angeles, CA
Dr. Isaac Reese

The workstation at King Drew is located in a secured room in the library. Two persons received the training at Oak Ridge. A training session for 24 senior medical students, in groups of four to six at a time, has been conducted at King Drew. The training will also be incorporated into the medical rotations. The major users of the workstation are currently librarians and medical students. A seminar will be developed for faculty training in the future. Concerning additional plans for the future, King Drew is considering using the materials in conjunction with a magnet high school that is on the campus of the medical school. The students at the school routinely perform research, and the databases would be quite useful to them. The phone system at King Drew is somewhat of a problem; this was also the case at some other HBCUs. This problem is currently being addressed by the appropriate individuals.

Discussion and Conclusions
Evaluation Efforts

The importance of the evaluation activities was discussed by Dr. Elliot Siegel, Assistant Director for Planning and Evaluation at NLM. Dr. Siegel stressed the need to document that the NLM materials are being used at the various HBCU sites, and that the project will make an impact. Dr. Saundra McGuire, evaluation consultant, indicated that the evaluation activities will be focused in at least four areas which will include:

- Documentation of project activities engaged in by the pilot HBCUs. A formative evaluation of project activities (e.g. which implementation strategies work and why, what should be changed, etc.).
- Summative evaluation activities at the end of the project period (e.g. what changes were brought about as a result of project activities, how and by whom were the project materials used, etc.).
- Strategies that are being developed by the HBCUs to insure that the project will be institutionalized after the pilot project period is over?

Specific evaluation strategies will be developed in conjunction with each of the HBCUs, and the evaluation activities will take place over the next eight to ten months.

Closing Remarks
Dr. Donald A. B. Lindberg, Director, NLM, also thanked the Panel and stated that he was surprised and pleased...
at the extent of accomplishment, thus far, by the individual institutions. He stated that Outreach and High Performance Computing and Communications were the Library's highest priority projects. Dr. Lindberg further expressed pride in the level of success of the HBCU Toxicology Information Outreach Project.

Current Status
The pilot HBCUs have done a remarkable job at implementing the strategies established during the first Outreach Panel meeting. They have become firmly linked with NLM as they work toward preparing students and faculty to take full advantage of the resource opportunities available. Progress are listed below:

- All participating HBCUs have received their hardware, software, and access codes.
- All workstations are operational and used by students and faculty for research and training.
- A high percentage reported success in the development and implementation of workshops, seminars, and one-on-one training experiences since the completion of the advanced instruction at Oak Ridge Associated Universities.
- All reported that both students and faculty use of the NLM resources for research has increased and that the resources are an essential tool for literature searches and research direction planning.
- Faculty and staff use of NLM resources for grant and proposal writing has increased after attending an introductory training class.
- Each school reported that curriculum development through program integration of NLM resources into new and existing courses has been successful. Relative to the diversity of each school's program, use of NLM's resources can now be found in courses ranging from basic biology and chemistry to drug information, advanced toxicology, and courses in the areas of medicine, dentistry, pharmacology, and environmental sciences.
- A high percentage reported either development and/or implementation of a pre-college plan to integrate the NLM resources into summer programs for high school students, and plans for use by undergraduates, first year medical students, and local high school teachers.
- Schools reported that newsletters, flyers, and brochures used as course announcements have been helpful in building awareness of the NLM resources both on campus and in the community.
- A high percentage of the schools reported that their faculty have been successful in integrating the NLM resources into class assignments and projects.
- Some HBCUs reported that they have successfully sought out and received additional sources of financial support to assist in the purchase of materials, hardware, and software and in offering extended training for faculty, staff, and students.

Future Directions
The reports presented at this panel meeting indicate that strategies that work effectively have been developed by the participating institutions. It was suggested by Dr. James Webster of Tuskegee that a mechanism for the HBCUs to communicate their successes to each other be developed. The publication of a newsletter to share information is now being considered.

- Introducing the materials at existing seminars within the departments
- Including news about the project in internal newsletter
- Introducing the materials to pre-college students and teachers
- Introducing the materials to health-care professionals outside of the university setting

Conclusions
The panel meeting was quite successful in meeting the objectives put forth by Dr. Bailus Walker. The NLM materials are being used effectively by the participating HBCUs, and strategies for improving and increasing their usage were put forth at this meeting. All are in agreement that although there is much more work to be done, the accomplishments to date are indeed impressive. The HBCU representatives left the meeting with renewed enthusiasm and a broadened vision of how their institutions and their communities can benefit from the resources at the National Library of Medicine.
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